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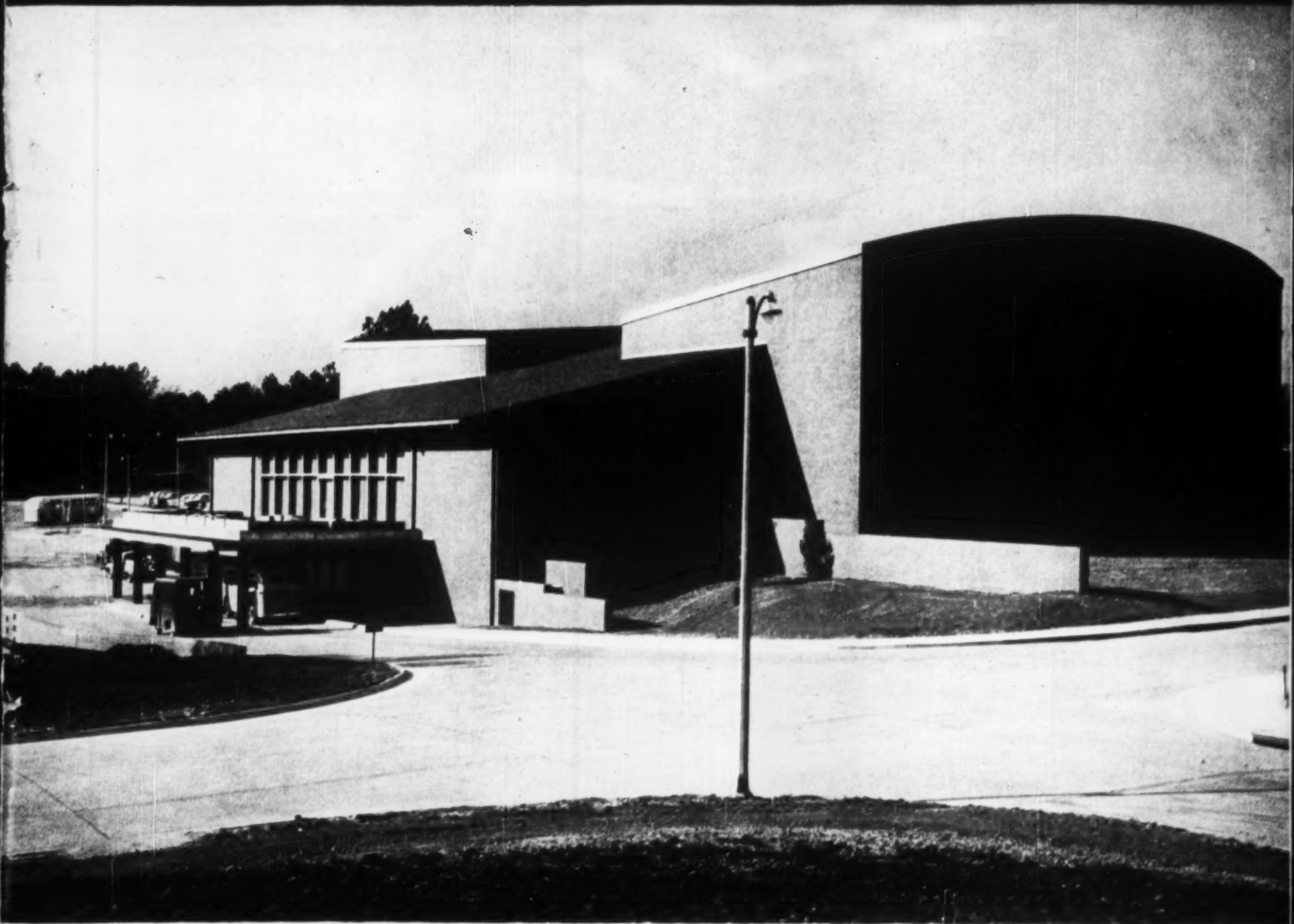

Theaters back-to-back for colonial Williamsburg *p. 54*

A McGRAW-HILL PUBLICATION

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UNIVERSITY MICROFILMS IN
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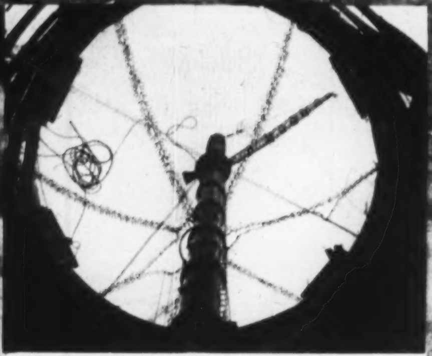
Taming over 7 Trillion Gallons of Turbulent Missouri River

CB&I Surge Tanks Serve Garrison Dam

When completed, the new Garrison Dam, opened in January 1956 near Riverdale, North Dakota, will provide 400,000 kilowatts of power, provide flood control and needed irrigation for large areas of both North and South Dakota. Its huge reservoir will form a lake 200 miles long to hold 7,494,573,000,000 gallons of, once turbulent, Missouri River water.

To control the, now man-made, turbulence of these waters as they race from reservoir to power tunnel, Army engineers of the Missouri River Division will rely on the six CB&I surge tanks shown above.

These 65 ft. diam. by 135 ft. high tanks are typical of pipelines, penstocks and steel plate structures CB&I has built for hydroelectric generating plants and for water diversion projects all over the world. Our plants are fully equipped and competently staffed to design, fabricate and *erect* such structures to *your* specifications. Write our nearest office for details.



Worm's-eye view looking up through safety net to boom tower used during erection of CB&I surge tanks at Garrison Dam.

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Mayari R holds original paint 10 years on Eel River bridge

This bridge, crossing the Eel River at North Scotia, Calif., was built in 1941 of Mayari R high-strength, low-alloy steel. In September of that year the bridge was given its original painting of two coats of red lead and one of aluminum paint.

So well did the Mayari R retain this paint that it required no further attention until 1951—ten years later—when the bridge was again completely painted! And that tells scarcely half the story; the fact is, the maintenance engineers expect this first repainting to hold until 1965—a 24-year life from two paint jobs!

This remarkable record of paint-adherence illustrates a characteristic of Mayari R appreciated by bridge engineers and maintenance departments. Tests employing five different types of primer paint, exposed under identical conditions for the same period of time, proved that Mayari R holds paint as much as 80 pct longer than carbon steel.

In addition, of course, Mayari R offers a much higher yield point than carbon steel, and 5 to 6 times greater resistance to atmospheric corrosion. These properties, as well as weldability and workability, are fully discussed and illustrated in Catalog 353. Your letter or a phone call to the nearest Bethlehem office will bring a copy of the catalog to you promptly.

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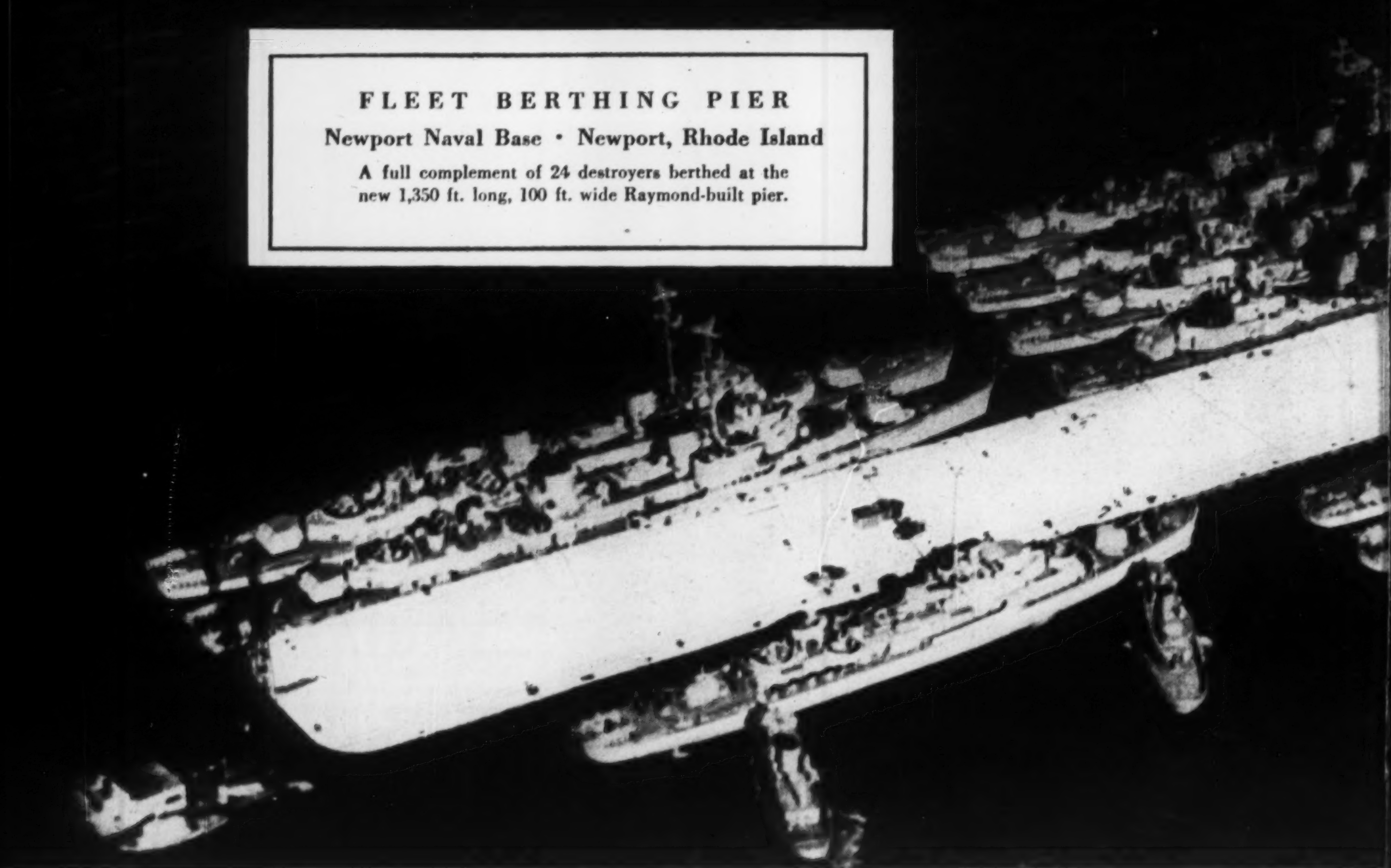
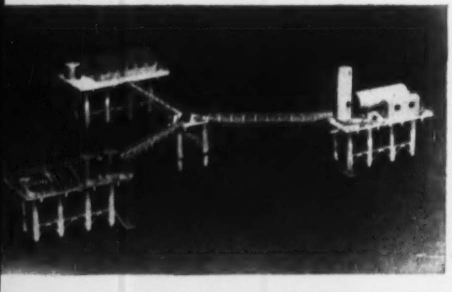


FLEET BERTHING PIER

Newport Naval Base • Newport, Rhode Island

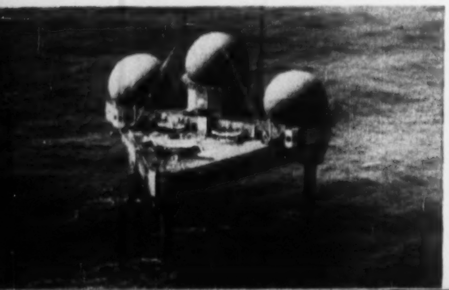
A full complement of 24 destroyers berthed at the new 1,350 ft. long, 100 ft. wide Raymond-built pier.

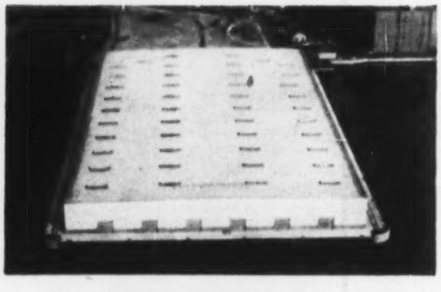
Offshore and Waterfront Installations



OIL PRODUCTION PLATFORM, supported by Raymond Prestressed Concrete Cylinder Piles off the Louisiana Gulf Coast for Shell Oil Co.

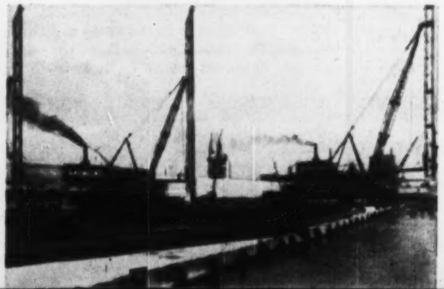
TEXAS TOWER, the world's first radar island, off the New England coast, was a joint venture of Raymond-DeLong.

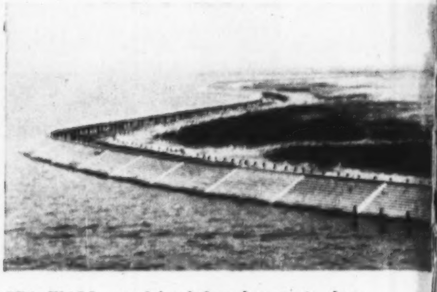




SHIP TERMINAL, a $6,000,000 Raymond-built structure for the Port of Boston, at East Boston, Mass. One of the country's largest.

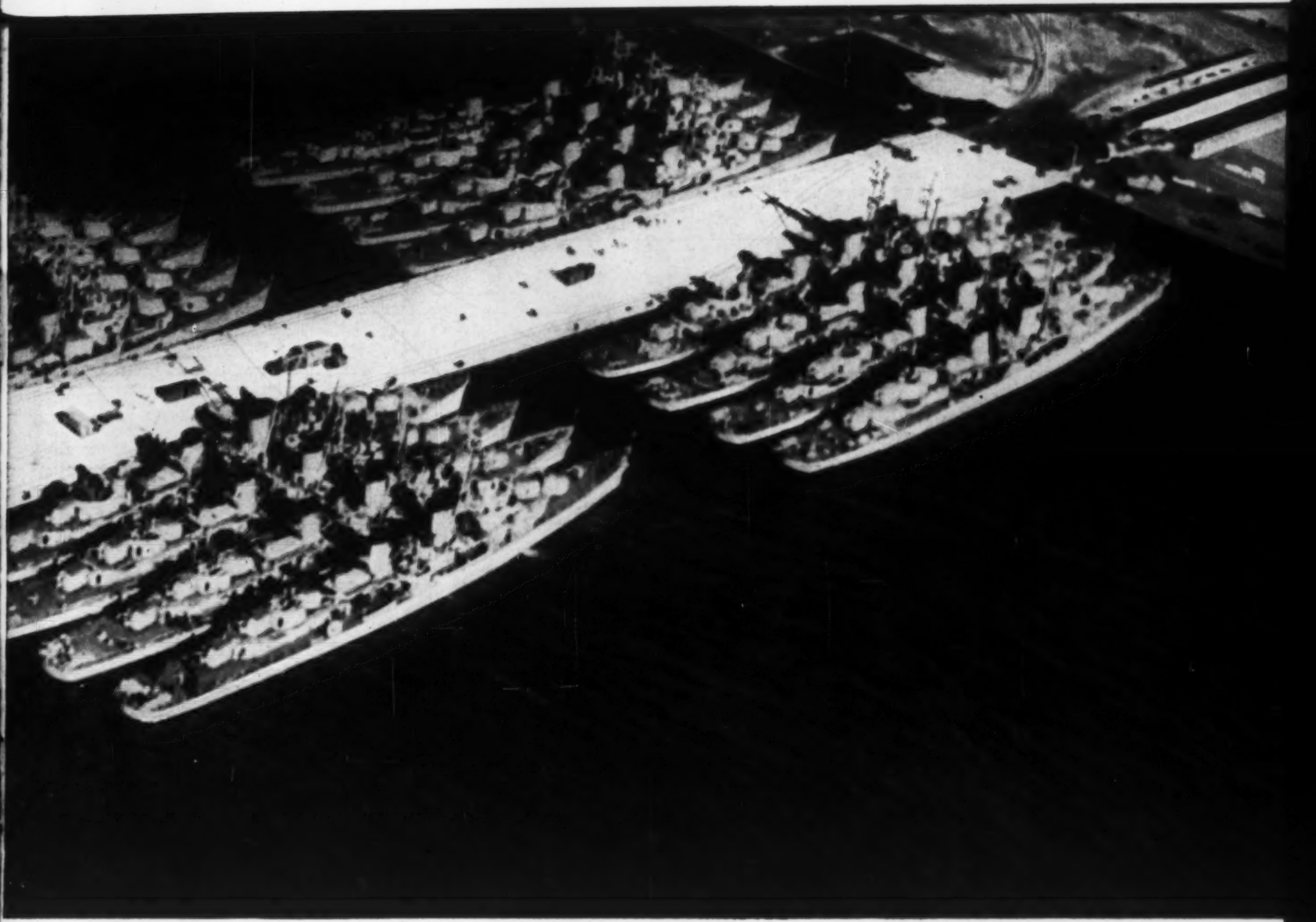
ORE DOCKS for Great Lakes Steel Corp., Zug Island, Mich. Shown here during construction.





SEA WALL, special reinforced concrete shore protection at Lake Pontchartrain, on the outskirts of New Orleans, La.

LOADING DOCK for the American Sugar Refining Co., outside of New Orleans, La.



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The complete construction of waterfront and offshore structures has been an integral part of Raymond's wide scope of activities, both at home and abroad, for many years. On these pages are a few examples of the number of wharves, jetties, sea walls, navigational aids, piers, oil drilling platforms and other similar contracts we have completed recently.

In addition, we continually strive to improve our service, methods and material. Our latest development is the Raymond Prestressed Concrete Cylinder Pile. Designed specifically for offshore and waterfront projects and bridges, this low-cost, fireproof support assures greater structural strength, increased load capacity and longer life and is not subject to corrosion or damage by marine life or water. Furthermore, it has a particularly strong resistance to bending from the force of waves and winds. Investigate the advantages of using Raymond methods, materials and experience on your next waterfront or offshore project.

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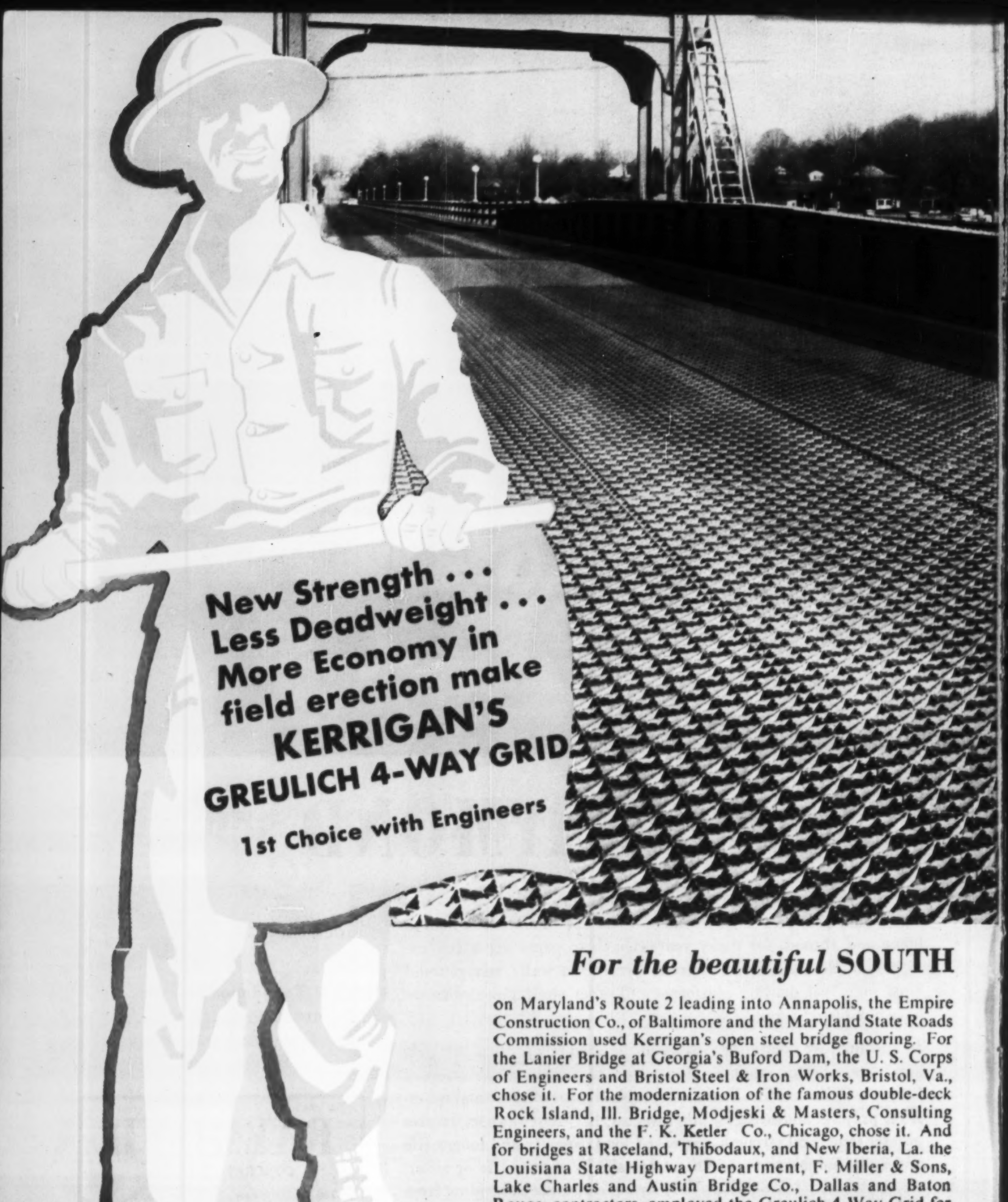
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on Maryland's Route 2 leading into Annapolis, the Empire Construction Co., of Baltimore and the Maryland State Roads Commission used Kerrigan's open steel bridge flooring. For the Lanier Bridge at Georgia's Buford Dam, the U. S. Corps of Engineers and Bristol Steel & Iron Works, Bristol, Va., chose it. For the modernization of the famous double-deck Rock Island, Ill. Bridge, Modjeski & Masters, Consulting Engineers, and the F. K. Ketler Co., Chicago, chose it. And for bridges at Raceland, Thibodaux, and New Iberia, La. the Louisiana State Highway Department, F. Miller & Sons, Lake Charles and Austin Bridge Co., Dallas and Baton Rouge, contractors, employed the Greulich 4-Way Grid for strength, economy and a smooth and quiet surface.

As you can see in the picture above, the integrally connected triangles of the Greulich 4-Way Grid provide a flat, single

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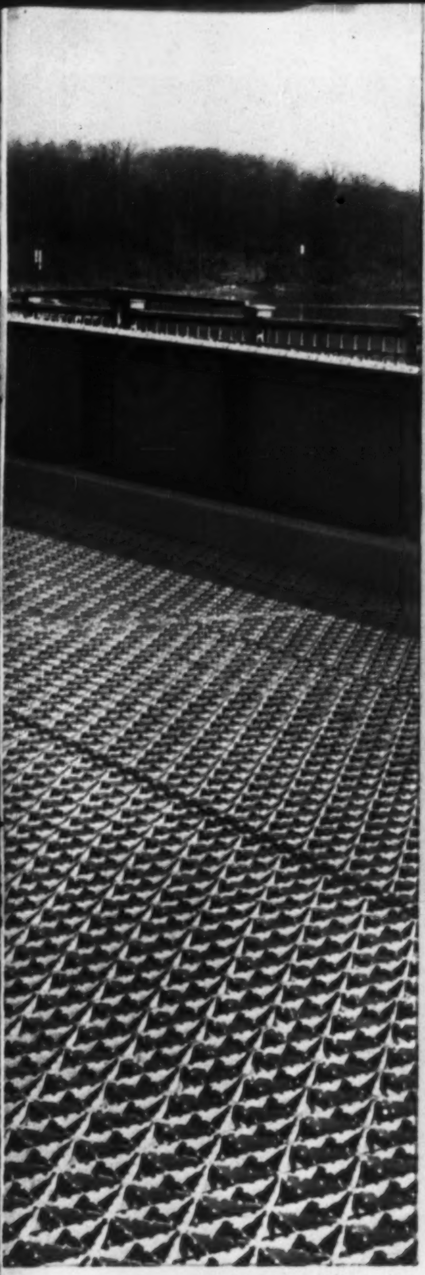

Flat, single plane surface gives smooth ride and reduces tire hum to a minimum on the South River Bridge. At the same time, the triangular opening in design and scientifically located serrations provide high skid resistance.

The famous Rock Island "double-decker" (just ½ mile from the site of the original bridge made famous by Abraham Lincoln's celebrated defense), will be modernized with Kerrigan's Greulich 4-Way Grid filled half-depth with concrete.

U. S. Patent
No. 2,740,335
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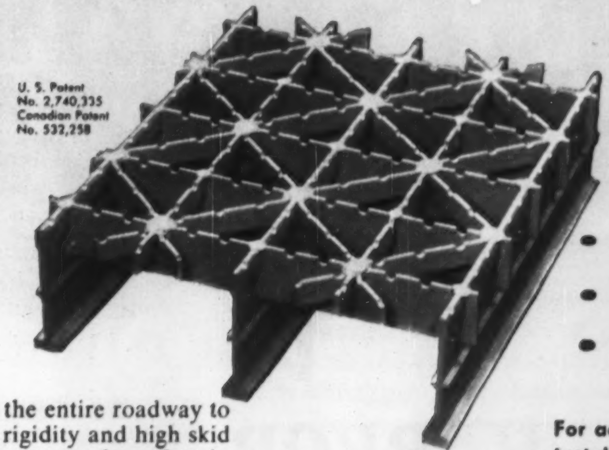

RIVER BRIDGE

plane, serrated surface extending over the entire roadway to insure maximum lateral or horizontal rigidity and high skid resistance. The 7½-inch center-to-center spacing of main bearing members permits installation with 20% fewer field welds with no loss of strength. The 5-inch deep units are fabricated in panels 7 feet, 3 inches wide to hold handling costs to a minimum and still permit hauling on flat bed trucks. The flooring can be furnished, when there is need, in half-roadway-width units to permit maintenance of one-way traffic at all times where installations are being made to replace old floors on existing bridges. When there is machinery or a street below the bridge floor level, concrete form pans and reinforcement rods can also be provided to allow filling all or portions of grid half depth with concrete. This permits a closed surface and yet holds dead load of flooring to a minimum.

- **Stronger**
- **Quieter**
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For additional information, test data, and list of bridges you can inspect in Ga., La., Fla., Mass., Ill., Md., Minn., and Penn., write Harvey F. Neel, Mgr., Division G-7, Kerrigan Iron Works, Inc., Nashville, Tennessee.

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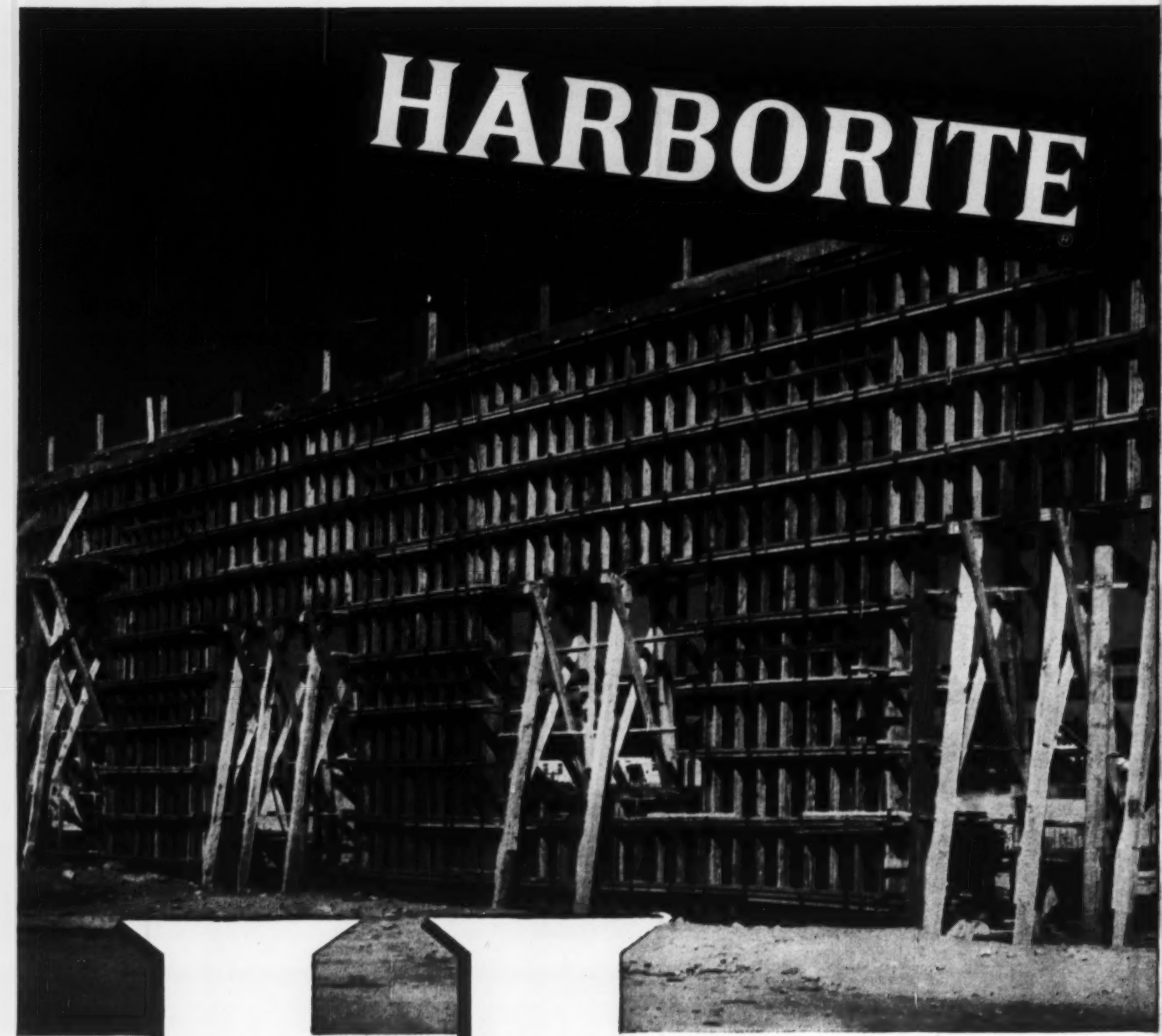

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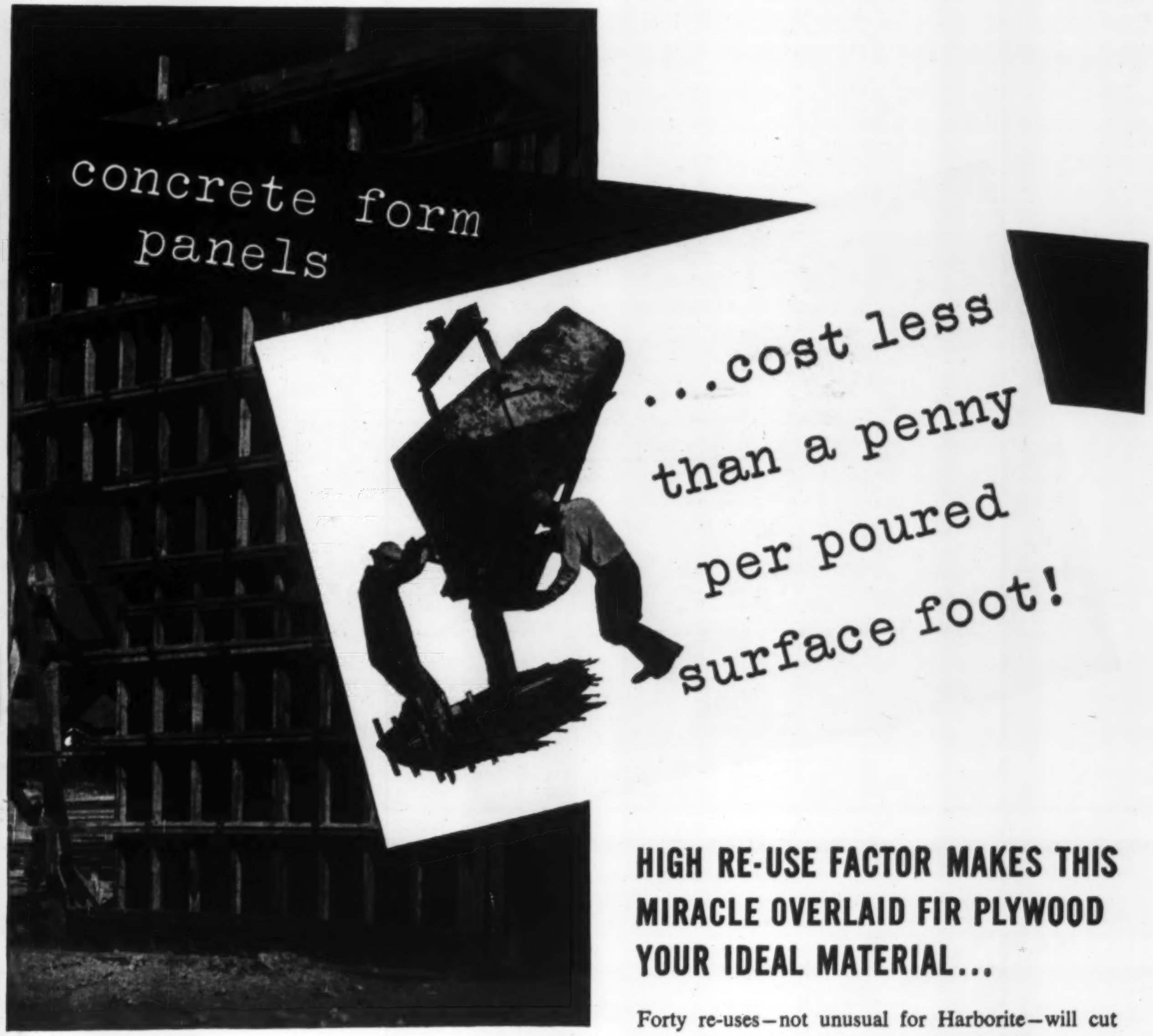

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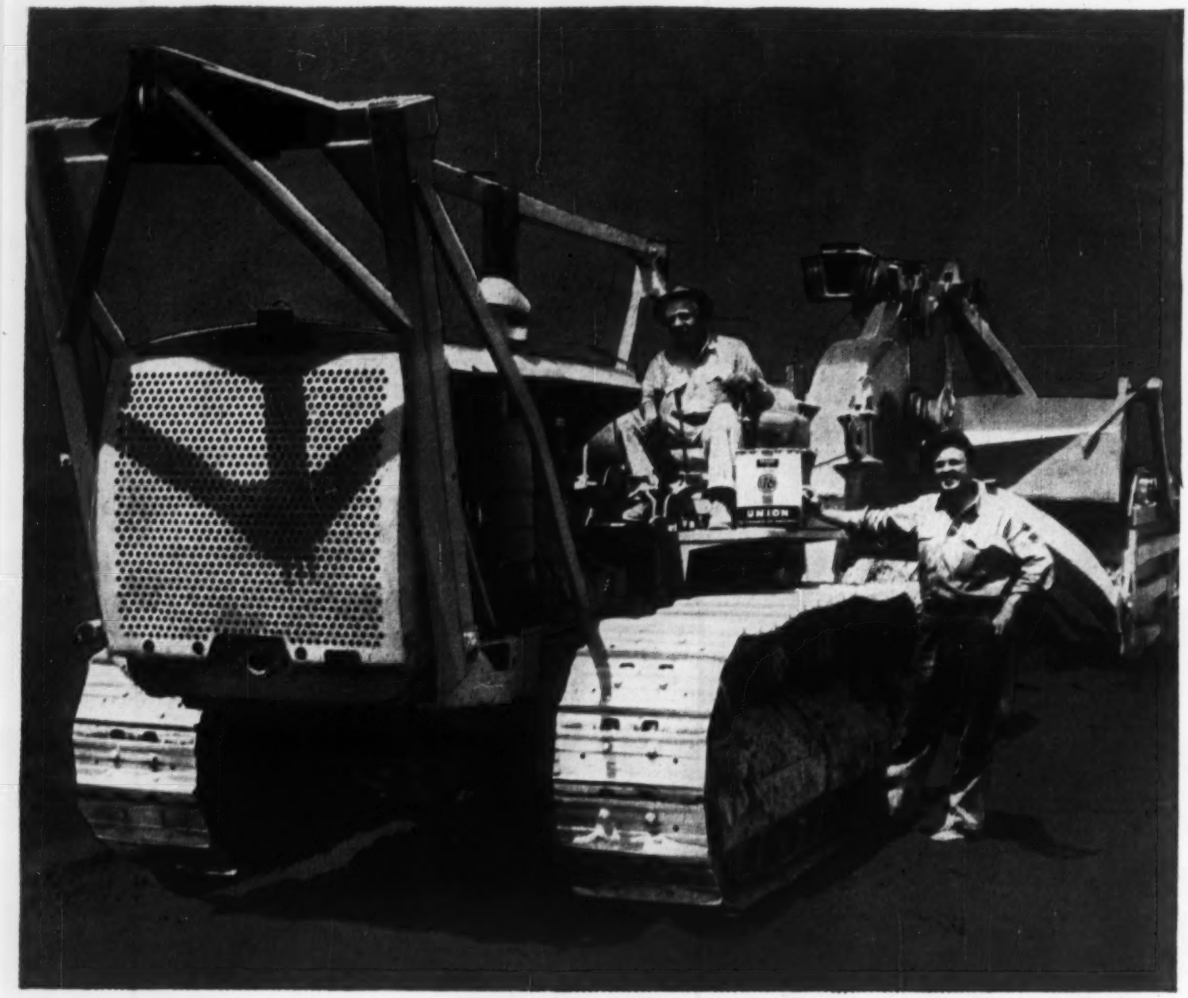

Jesse Franco and Johnnie Palmer, Franco & Palmer, contractors, Dinuba, California

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Reader Comment

Faster Concreting at Bhakra

Sir—Since our last report on concreting at Bhakra Dam (ENR Dec. 20, 1956, p. 9), where it was noted that 8,376 cu yd had been placed in one 24 hour period, we are happy to inform you that the previous record was bettered during the 24 hours starting from 8:00 a.m. March 18 to 8 a.m. on March 19, when 9,104 cu yd was placed. This was accomplished from one batching plant with four 4-cu yd mixers. During one 8 hr shift, 761 buckets of concrete were mixed and transported. Placing was mostly done by two double cantilever cranes and two revolving cranes except that, for a short time, a third revolving crane was also working.

M. R. Chopra
Joint Director
Construction and Plant Design
Bhakra Project
Nangal Township, India

Stresses in Dams

Sir—I have recently designed an arched gravity dam on Kings River, Calif., which has a lower portion resting on banks of about 60 deg inclination similar to the banks at Grand Dixence Dam in Switzerland, whose design was discussed in your recent article (ENR March 28, 1957). I have found that such conditions are not described in books or taught in schools. Instead, straight gravity dams like Grand Dixence are being designed as if they were infinitely long on level foundation, with uplifts vertical.

Actually, it is a spatial problem, with sloping sides exerting hundreds of millions to many billions of pounds wedge pressures against the central portion, and uplifts exerting inclined forces instead of vertical.

If the toe pressure at Grand Dixence is 1849 lb per sq. in. (as stated) for a parallel slice, there would be wedging pressures on the deepest part of almost same amount, producing tensions perpendicular to the face of from 160 to 200 lb per sq. in., additive to a like amount from slice forces, and varying somewhat with elastic properties of

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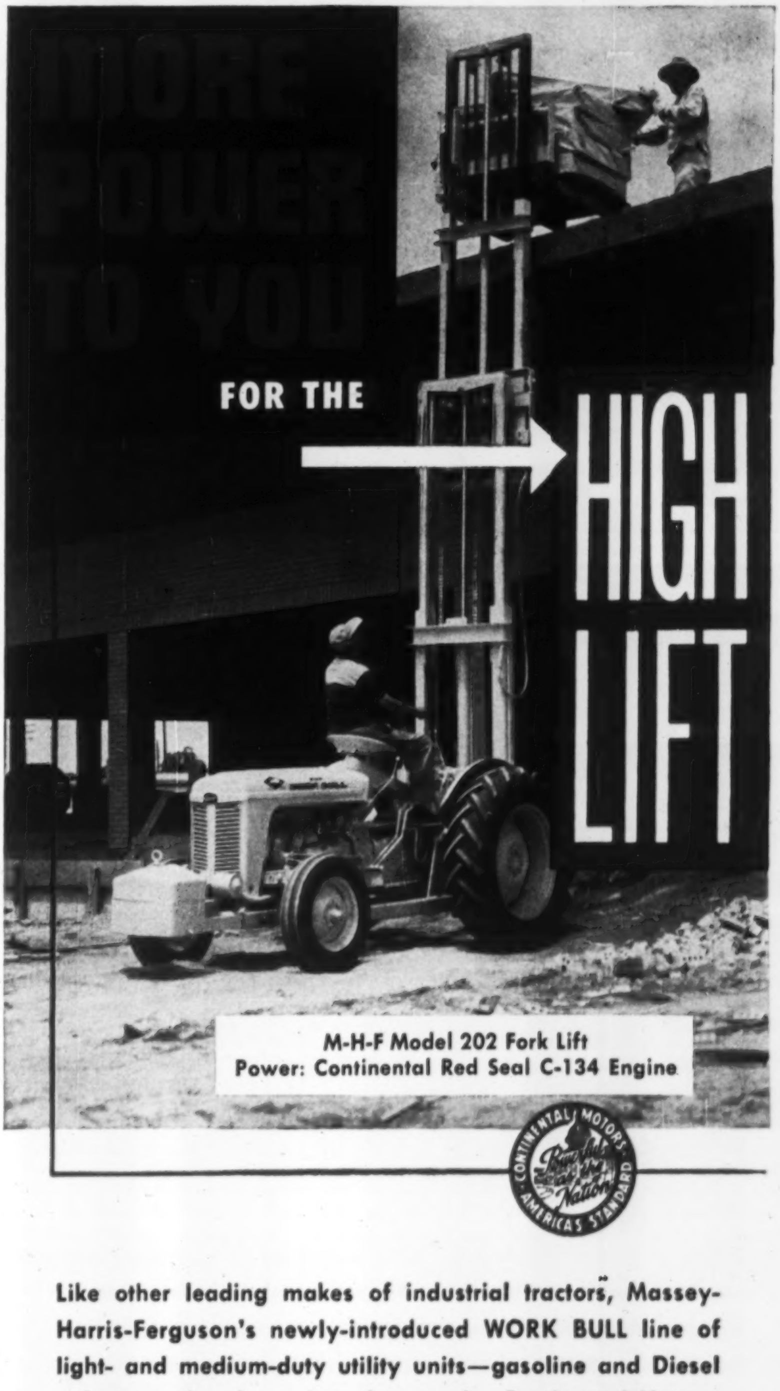

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Power: Continental Red Seal C-134 Engine

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CAST IRON PIPE

IT'S CAST IRON PIPE

Cleveland, Ohio—Over one half million gallons of sludge are pumped daily through 13 miles of 12" cast iron force main to the Southerly Sewage Treatment Works.

Portuguese Bend, Calif.—Cast iron pipe and fittings for salt water line at Oceanarium, Marineland of the Pacific.

CAST IRON

Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, Suite 3440, Prudential Plaza, Chicago 1, Ill.

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Torresdale Filter Plant: Morris-Knowles, Inc., Design—McCloskey & Co., Construction
in PHILADELPHIA
or THAILAND
Spillway Structure, Greater Chao Phya Project—Royal Irrigation Department

Servicised Rubber Waterstop and Self-Expanding Cork Joint Filler SOLVE the SAME PROBLEM

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various brands of mixes and also with time plastic flow.

This would be on the verge of, or past, rupture in deteriorated state, even without taking temperature changes into consideration. Such are so high that we do not hear of them in all cases.

If the Swiss government allows the design on basis of level footings and without temperature, it is its province and not subject to protest unless U.S. citizens are financially involved. However, there seems to be a tendency in the U.S. to beat this record Swiss dam, without considering all of the adversities involved on sloping banks, and we may have a major disaster. I believe that professors at universities should be alerted to remind pupils that the teachings of level design are to be supplemented by actual examples with sloping banks, and also reminded that resultants on sloping banks form an extremely acute angle with the bank unless the abutments are cut to resist sliding. Some relief may be imagined by arch action, if there are no outlet works near the bottom.

FRANCIS N. DLOUHY
Los Angeles, Calif.

CALENDAR

International Commission on Irrigation and Drainage, 3rd Congress, Sheraton-Palace Hotel, San Francisco, Calif., April 29-May 4.

Building Officials Conference of America, Inc., 42nd Annual Convention, The Jung Hotel, New Orleans, La., May 6-9.

American Water Works Association annual conference, Atlantic City, N. J., May 12-17.

12th Purdue Industrial Waste Conference, Purdue Memorial Union Bldg., Lafayette, Ind., May 13-15.

Construction Specifications Institute, annual convention, Sheraton-Park Hotel, Washington, D. C., May 13.

Rail Steel Bar Association, Broadmoor Hotel, Colorado Springs, Col., May 13-15.

American Institute of Architects, Centennial Celebration, Sheraton-Park Hotel, Washington, D. C., May 14-17.

Jet Age Airport Conference, ASCE Air Transport Division, Park Sheraton Hotel, New York, N. Y., May 15-17.

Society of American Military Engineers, annual meeting, Mayflower Hotel, Washington, D. C., May 20-21.

American Institute of Steel Construction, Ninth Annual Engineering Conference, Edgewater Beach Hotel, Chicago, Ill., May 27-28.

Air Pollution Control Association, golden jubilee meeting, St. Louis, Mo., June 2-6.

American Society of Civil Engineers, spring convention, Hotel Statler, Buffalo, N. Y., June 3-7.

Annual Meeting of American Society for Testing Materials, Chalfonte-Haddon Hall, Atlantic City, N. J., June 16-21.

Concrete reinforcing Steel Institute, annual meeting, The Greenbrier, White Sulphur Springs, W. Va., June 24-29.

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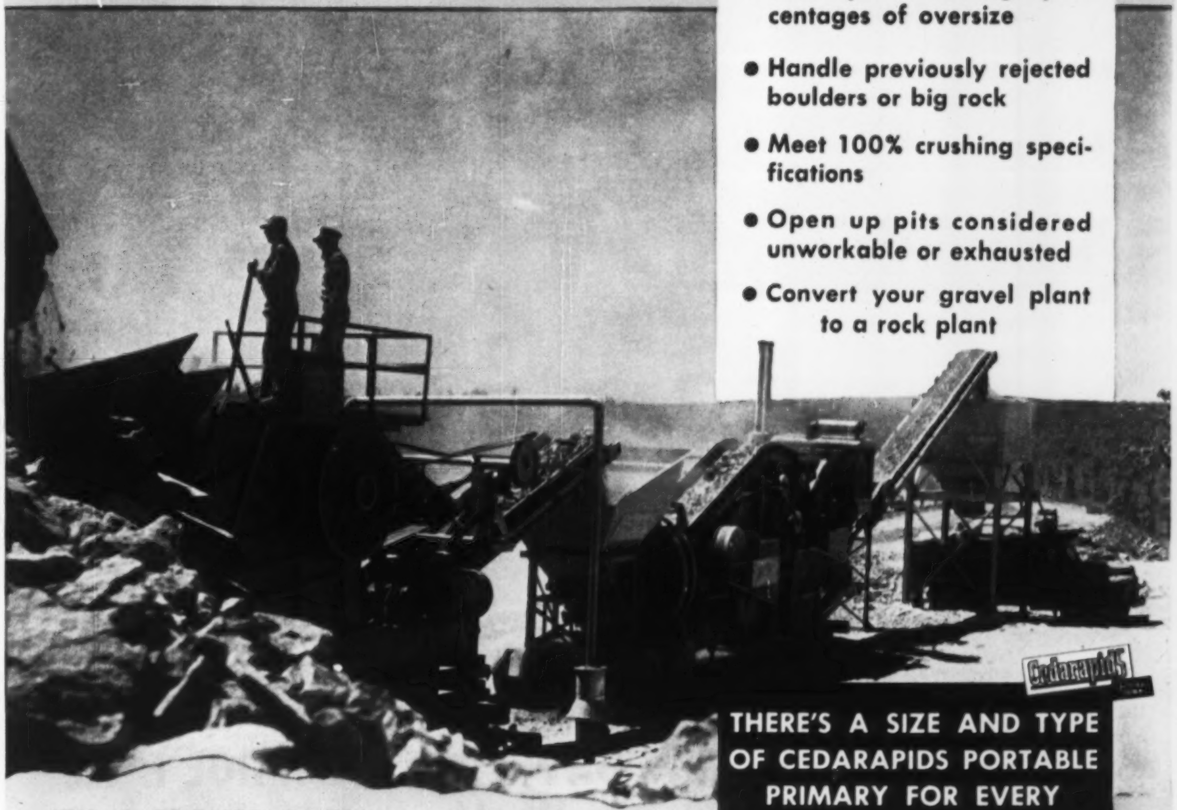

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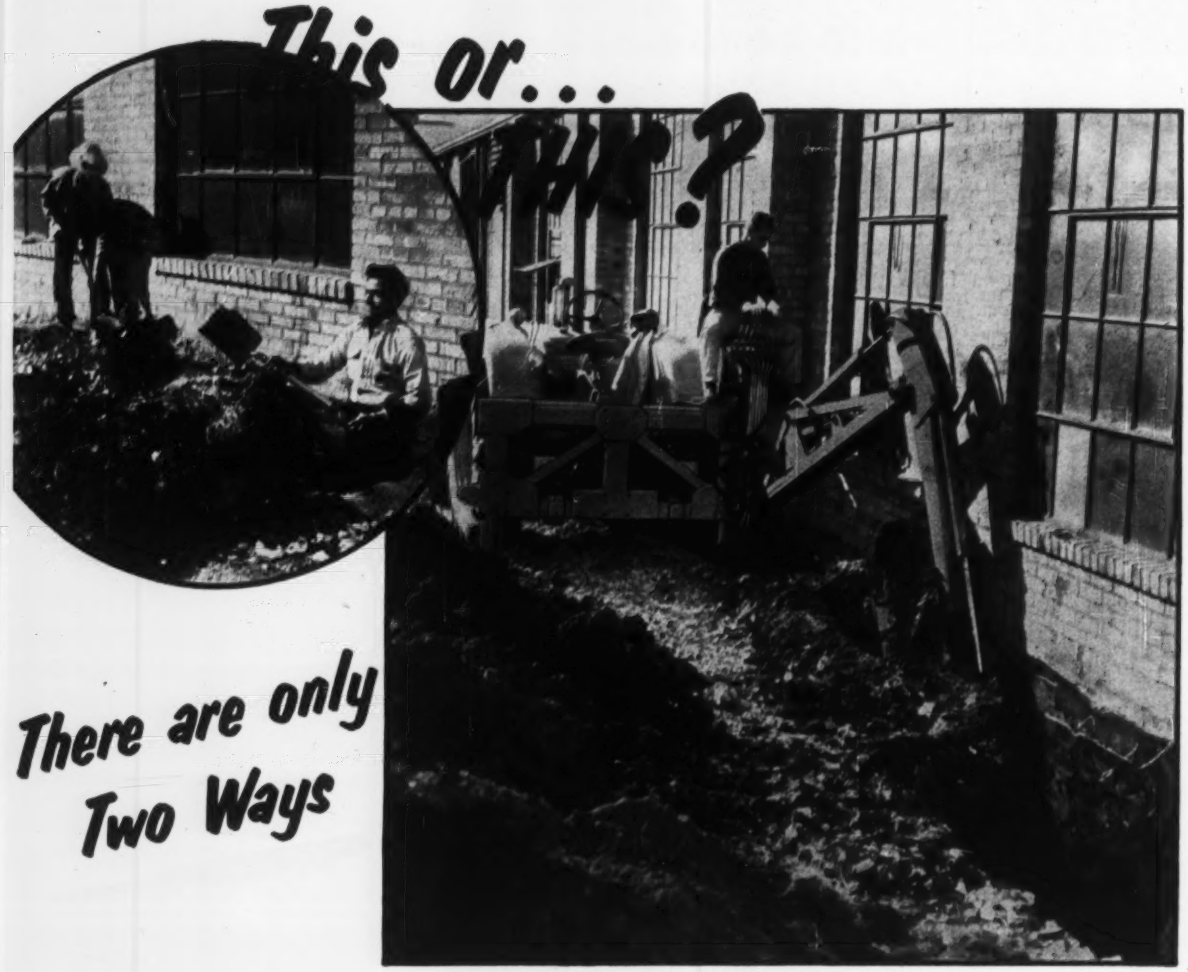

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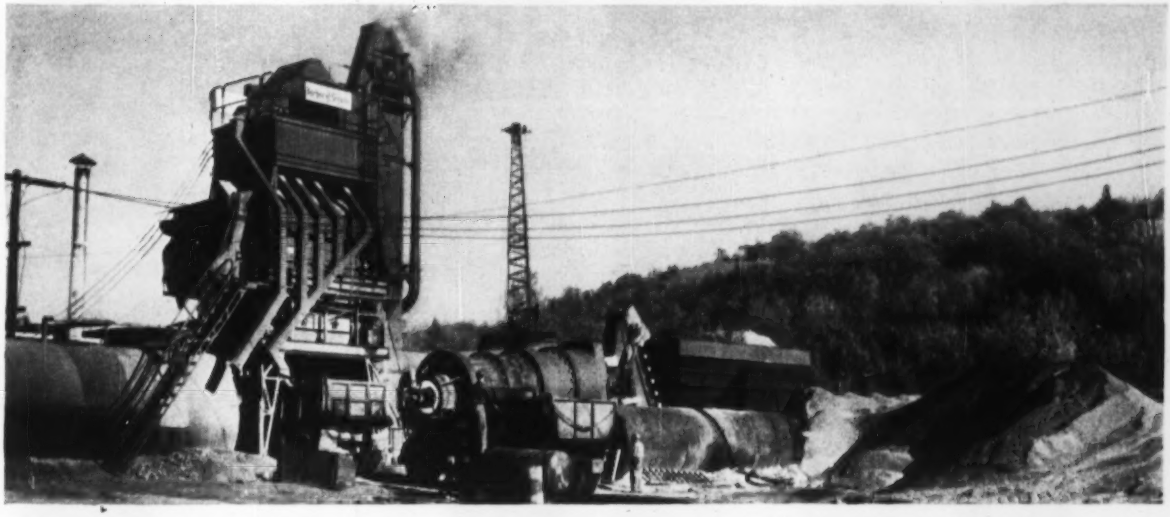

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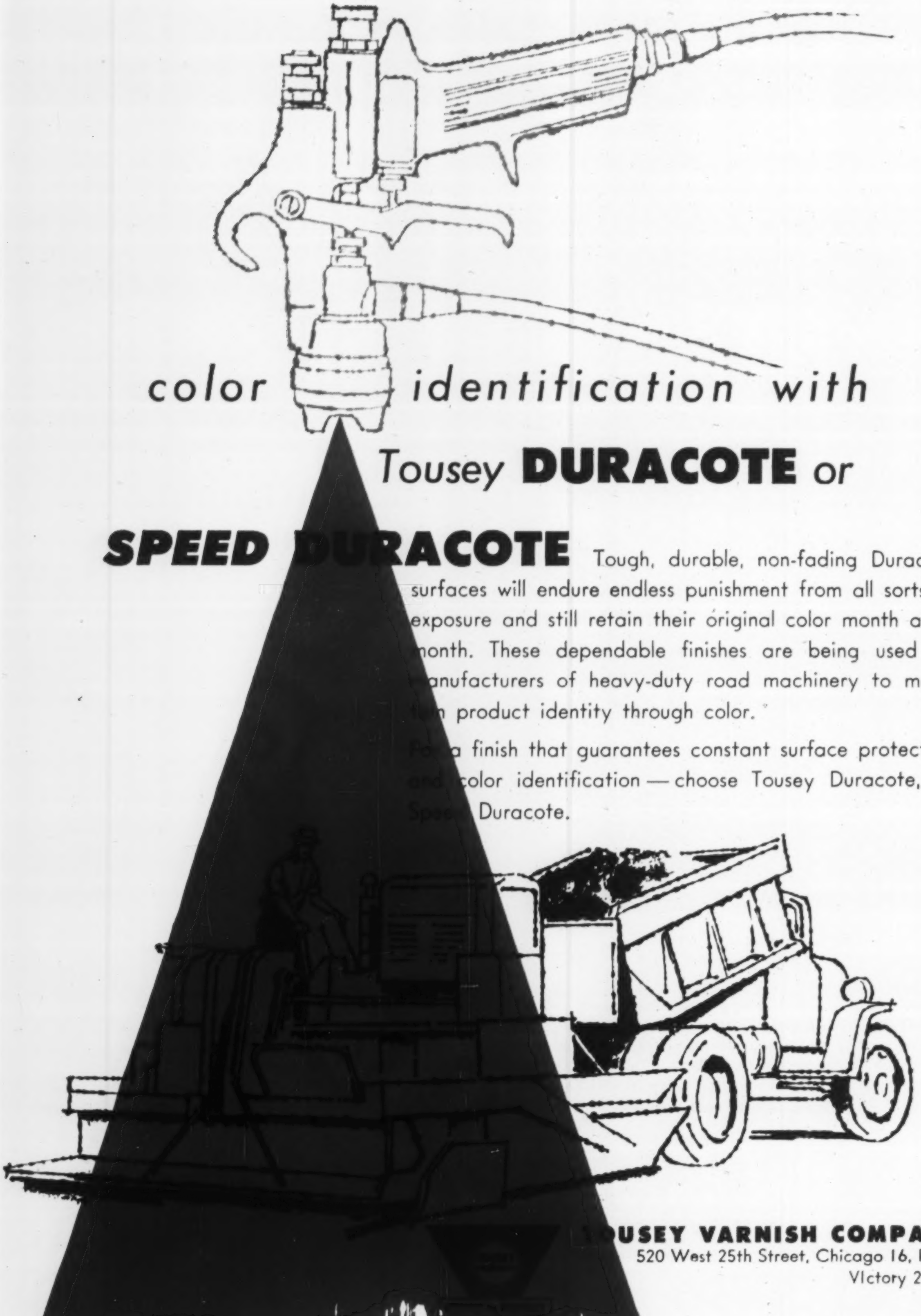

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ENGINEERING NEWS-RECORD

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Back issues of Engineering News-Record *are generally available for the previous six months. Price 35¢ each copy except Annual Cost Issue. Semi-annual indexes will be sent on request.* Engineering News-Record *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

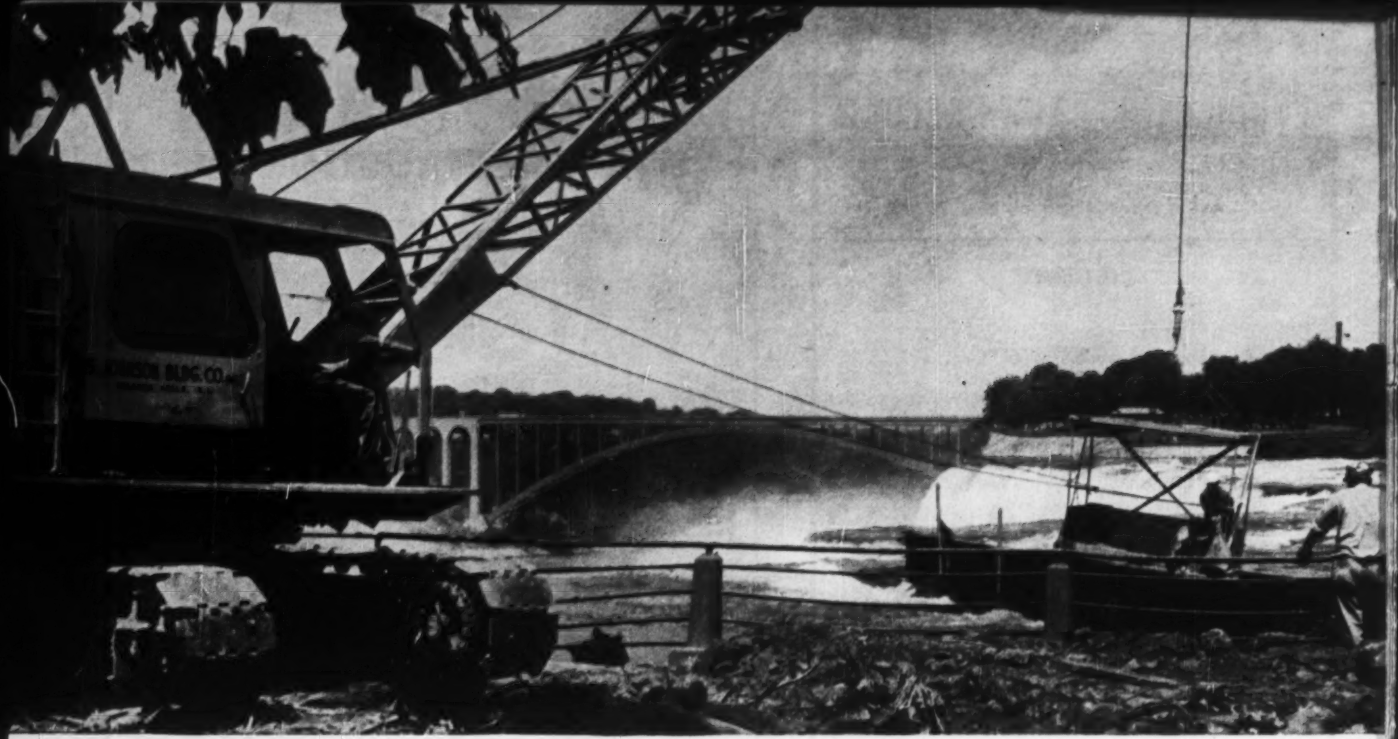
REBOUND IN PRIVATE WORK—The upturn in private heavy construction forecast by ENR (March 28, p. 21) apparently has arrived. For the second consecutive week, private awards have climbed impressively. Moreover, the rise has been well balanced. Industrial building, commercial building and even private mass housing are pulling together to lift the private construction market from the bottom of a deep slump.

NEW WAGE DEMANDS—The Associated General Contractors' Northern and Central California Chapters, already faced with wage demands from carpenters and laborers ranging from 40½ cents to 57½ cents an hour, have now heard from two more crafts. Cement masons are asking for 48 cents—25½ cents in wages and 22½ cents in fringe benefits—and the teamsters hope to get 25 cents more in wages for most classifications plus 30 cents for holiday, pension and vacation funds. Meanwhile, in Miami, Fla., where carpenters are pressing for 47 cents more spread over two years, roofers have won a package increase of 63 cents an hour in a two-year contract.

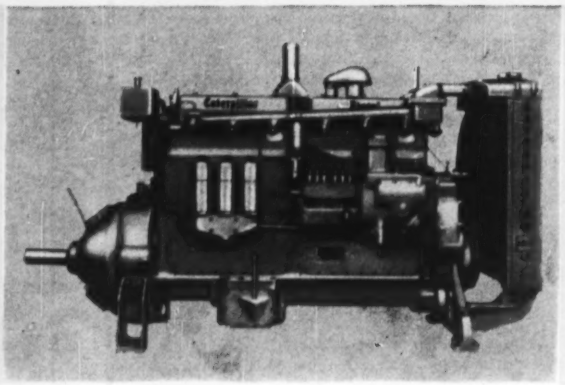
LONG SAULT'S LAST THROES—It was two weeks ago that contractors dumped what they thought was the last load of fill into the St. Lawrence River where their cable-way-placed cofferdam was to shut off flow in Long Sault of the International Rapids near Cornwall, Ont., but the mighty rapids had raged for too many eons to give up so readily. The contractor had to drop steel frames into the fast stream to hold the boulders being placed. And last week there were still reportedly 315,000 gpm getting by the husky cofferdam. But for the romantic Long Sault, it was all over. The St. Lawrence was, at last, a controlled stream.

ENGINEERING CENTER FOR CLEVELAND—Already assured of more than half the cost, the Cleveland Engineering Society will start work immediately on a $1½ million engineering and scientific center. Demolition on the site is already under way and formal groundbreaking ceremonies were held this week. With about 50,000 sq ft of floor space—approximately three times the space in the Society's present quarters—the new building will provide meeting facilities for 50 odd engineering and technical groups.

ANOTHER HOME FOR THE DODGERS—Robert Moses, New York City's Park Commissioner, proposed informally last week that the city make available part of the old World's Fair grounds as a site for a new stadium for the Brooklyn Dodgers baseball team. Roofed with a plastic dome, the new stadium would seat 50,000 and would cost about $12 million.



DEPENDABLE CATERPILLAR POWER HELPS CHANGE NIAGARA'S COURSE



Caterpillar-powered equipment is helping slow Niagara's famous Bridal Veil Falls to a temporary trickle. This CAT*-powered Koehring crane is swinging two men with sandbags to build a diversion dam in the Niagara River. Walter S. Johnson Building Co., Inc., of Niagara Falls, N. Y., is building a total of three dams. The objective is to direct the river flow away from two islands, which are badly water-eroded, so that overhanging precipices can be cut away.

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MODERN HEAVY-DUTY POWER

WASHINGTON OBSERVER

- **Eisenhower gestures to cut budget**
- **Compromise on TVA freedom in sight**
- **Democrats box Administration on AEC**
- **More mobility for mortgage money**

● **Eisenhower's gesture to the economy wave** will (1) delay some military construction of defense installations, and (2) not cripple progress on Army civil works projects already under way. The President's main concern is to reduce the amount of money Congress appropriates to keep programs going, rather than to reduce materially actual spending in fiscal 1958.

New money earmarked for the civil works projects will be delayed, but Army Engineers say actual work will not. Rather, the requests were scaled down after a study showed the money was not immediately needed.

Congress probably will go along with Eisenhower; local interests will be assured the appropriations cuts will not affect going projects—at least until the next session of congress.

—

● **A break may be near on giving TVA authority to expand its plants.** Both the Administration and the Democrats want it to have authority to issue its own revenue bonds to finance new steam plants as they become necessary to serve TVA area customers. Big fight has been over how free TVA is to be of Congressional veto on its expansion plans.

Sen. John S. Cooper has come up with a compromise which would authorize TVA to finance $750 million of plants over the next five years through revenue bonds—leaving it to the future to decide what sort of "permanent" authority the agency should have.

—

● **The atomic energy construction program is in a real political bind.** The Democrats in Congress have the Administration somewhat over a barrel.

Each AEC project may have to go through the appropriation procedure as do other public works projects, if the Democrats carry out their threat.

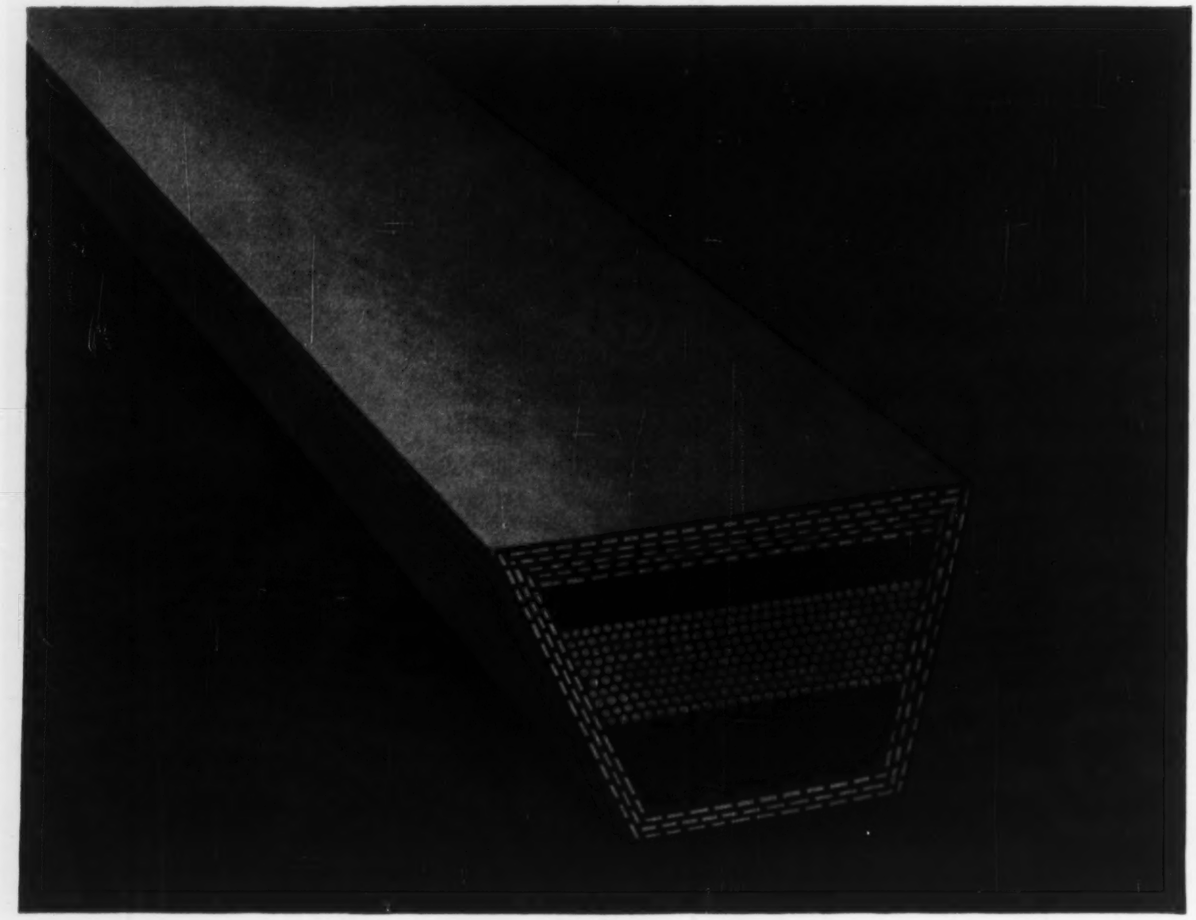
Democrats may drop this talk if Republicans agree to a big program of federal plants—the $400 million Gore bill that was opposed by the Administration last year.

—

● **Areas short on money for housing mortgages are going to get some relief.** Indeed, a transaction to move savings and loan funds from New England to California was made this week. The deal is permissible under a recent government regulation allowing purchase of conventional mortgages outside the old 50 mile radius. The Worcester, Mass., Federal Savings and Loan Assn. is supplying mortgage money to the Westchester Federal Savings and Loan Assn. in Los Angeles. The new regulation still requires local institutions to put up half the money.

More such arrangements are in the works. Officials estimate a flow of more than $100 million to become available under the new regulation within a year.

V-BELTS



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United States Rubber

BPR has suggested an "anti-pirating" clause in road department-consultant contracts

There are those who object to it . . .

- **It is unconstitutional; it amounts to a manpower freeze**
- **States are using it too broadly**

There are those on the defensive . . .

- **BPR says the states asked for it; language of the clause needs explaining**
- **Most big consultants accept it**

Are Highway Engineers Being "Frozen"?

This week there was pressure on the Bureau of Public Roads to delete a contract clause it has devised to keep consultants from hiring away state highway engineers. But the bureau wants to keep the clause; practically all the states want it; and only a rare consultant can be found who voices vigorous objection.

Effect of the contract clause, now used by virtually all states and accepted by, or imposed upon all consultants designing federal-aid highways, is to prevent such consultants from hiring for full or part-time work any civil service highway personnel – federal, state, county or city.

State highway departments generally claim they need such protection against loss of engineering personnel, although some admit this clause seems too restrictive.

Louisiana is the only state known to balk at its use.

• Consultants pro and con–Consultants contacted for comment by ENR last week were mostly inclined to go along with the clause, although a majority would agree when pressed that those who oppose it are justified. The sole dissenter found called it a most "unhappy" clause–"We have no right to freeze a man in his position." This spokesman's firm has fought the clause, but unsuccessfully.

The National Society of Professional Engineers has been outspoken in recommending its deletion. Although the matter has been referred to the Professional Practice Committee of the American Society of Civil Engineers, no definitive action has been taken by that group.

For its part, the Bureau of Public Roads says that there is widespread confusion about the purpose of the controversial contract provision. A clarification is expected to be issued by BPR shortly.

A BPR spokesman claims the states wanted such a clause, but wanted to have it on a higher-than-state level so they asked the bureau to handle it. Primary purpose, according to BPR, is to stop "letterhead" consultants–those with little or no staff–from getting highway design contracts and then hiring engineers later. Mainly, they would have to draw from state highway departments and BPR, it is assumed. Also, the device is geared to prevent going consulting firms from hiring state engineers to expand their staffs after they get contracts.

Frank Turner of the bureau says the clause is aimed at applying only to specific contracts and is not intended to extend to other work being done by consultants, even though the other work is financed with federal-aid money. Consultants, however, claim the clause does apply to other work in actual practice.

Most states are using the clause and like it, says Mr. Turner. However, it is strictly voluntary by the state and BPR does not mandatorily require it. BPR justifies the clause on grounds that states want it, and that it is up to them if they use it.

• One state opposed–R. B. Richardson, Director of the Louisiana State Highway Department, told ENR last week he will not stand in the way of any engineer in his department bettering himself by taking a job with a consultant. "If we can't make employment with the state attractive and keep it in competition with private engineering then we shouldn't resort to regimentation to keep our engineers," says Mr. Richardson. He admits that anti-raiding clauses had been used in the past, but he does not intend to use this present clause unless forced to do so by BPR.

Behind the clause is the BPR belief that better highways result if the state departments handle the work. It is the bureau's stated recommendation that all possible work be kept and done by the states themselves. It is reasoned that the states have more technical knowledge and facilities to draw from, and can experiment more with new designs and materials. Consultants, on

. . . BPR's "anti-pirating" clause in dispute

"The consultant shall not engage, on a full-or-part-time or other basis during the period of the contract, any professional or technical personnel who are or have been at any time during the period of the contract in the employ of the Bureau of Public Roads or the highway organization of any state, county, or city, except regularly retired employees, without the written consent of the public employer of such organization."

the other hand, are working within a time and dollar figure and changes normally cut into their profits so they don't bother too much about carrying out experiments.

As a rule of thumb, BPR figures that work done by consultants normally costs about twice as much as when it is done by state departments. [BPR spokesmen earlier have said it costs three times as much (ENR Nov. 8, 1956, p. 28) however, consultants will argue with this statement. It boils down to a question of how costs are figured —how much for state overhead, for example.]

It remains obvious that the Bureau of Public Roads wants the states to do the bulk of the highway engineering. It expresses concern over a few states that are relying heavily on consulting engineers now.

According to the law, states must have adequate staffs before they qualify for federal-aid money, but the law is vague on just where the break point is —what is an adequate staff?

• **NSPE's objections**—Paul Robbins, Secretary of the National Society of Professional Engineers, openly opposes the contract clause, and the NSPE has gone on record as being against it. His arguments are that the clause amounts to a manpower freeze. In practice, Mr. Robbins says that states are slapping the clause in all contracts and telling consultants that the BPR requires them to do so. Also, the clause is being extended to cover other types of work, making a generally confused and unworkable situation, he claims.

As an example of how far the manpower freeze can be carried—even beyond a full, broad application of the clause that controls hiring of anyone in a civil service highway job—there is this story told of one consultant's dilemma:

He thought he had lined up some new recruits from the senior class in a certain college when he was told, "hands off." The state's highway department, for whom he is doing some consulting, made it plain that it would have first recruiting crack at those students.

NSPE is waiting for the anticipated change or clarification to come from BPR. If it doesn't meet with their approval, they plan to protest again. Tactics will be to focus public attention on the matter and take it to Congress, either for pressure or a change in legislation.

The answer to the situation, according to Paul Robbins, is not a restrictive contract clause, but for states to hike the salaries of their engineers high enough to hold them.

No one has said as much, but a strict compliance with the clause looks like a back door approach to possible wage controls.

• **Restricts competition**—Aside from being in effect a wage control device, the anti-pirating measure can serve also to control competition in the highway consulting field, by making it hard for new firms to hire staffs. Established consultants, who find the clause proper and reasonable as far as their own business operations are concerned, declare that it all depends on the point of view: If they were small firms looking to enlarge, they might object strenuously. And, if one partner in a large firm were still in the state highway department where he spent many years, he'd have still another view of the situation, he claims.

Michael Baker, Jr., Rochester, Pa., consultant now designing millions of dollars of highways for six eastern states, was as recently as 1943 on the outside of the highway field, looking in. Now that he is in, he has no business objection to the hiring clause, but he says he can understand the roar that has gone up about it. He says that if enforceable, it is an unreasonable clause.

Several consultants blame BPR's apparent conviction that consultants increase the states' engineering cost two or three times for this effort to prevent consultants from taking men, and therefore work, out of the highway departments. And all deny the claimed cost differential. "We're too happy and busy to object to these BPR claims on costs," says Michael Baker, Jr., but he points out that his first highway job was gained by offering to design Penn Lincoln Parkway for exactly what the state had figured its engineering would cost. He claims he broke even when the $10 million job grew to $50 million worth and his $549,000 final fee was a scant 1%.

• **The states' reply**—For the states' part, there are several who report they are raising salaries to the point where turnover is no longer a problem.

L. P. Zimmerman, new Minnesota Highway Commissioner, credits past pay raises and a hoped-for raise now in the works that will bring total increases since 1955 to 32%. He also favors the federal clause.

Arizona is another state that credits pay raises for a stabilizing manpower situation.

Missouri's assistant chief engineer J. Corbett believes some such restriction on raiding of highway agencies is needed, but he feels the federal clause seems too restrictive.

California remains unaffected by it all. Director of Public Works Frank B. Durkee very strongly favors the provision, but under state law no consultants are used in the state as long as its Division of Highways can get men. There was an unsuccessful attempt to change this situation last Election Day, but it stands: "We haven't used consultants except on toll bridge projects," says Mr. Durkee.

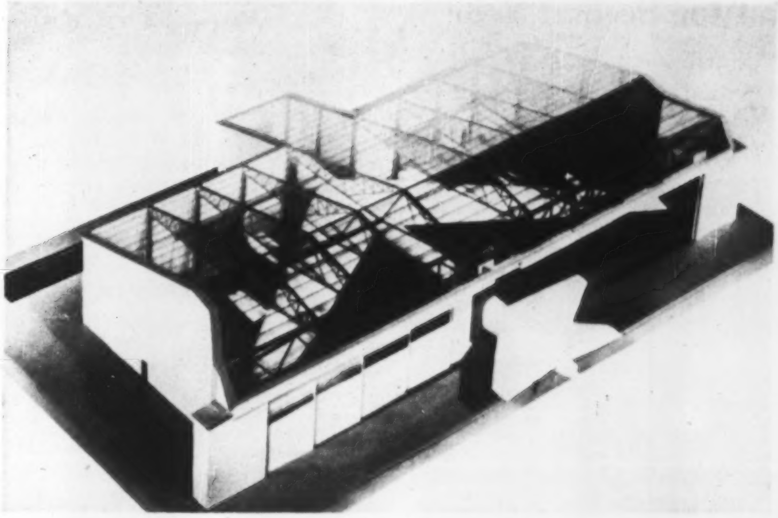
South Carolina's Highway Commissioner Claude R. McMillan says his state hasn't used consultants on highway design—only bridges. (And on bridge contracts, the maverick McMillan says he'll continue his state's policy of taking competitive bids on engineering—a policy that got him ousted by ASCE a few years ago.)

• **Old story, same ending?**—Unwritten agreements restricting hiring are not new—nor are they limited to the highway department-consultant relationship. But in this field such agreements have existed openly for years. One consultant says he recalls stipulations back as far as 1942 in contracts with state highway departments. These early agreements, however, were concerned solely with protecting the client from loss of personnel to his engineer. The new clause born in a BPR memo to the states early this year obviously can widen the "off-limits" areas for recruiting consultants to all highway agency engineers, anywhere.

There were 20,500 engineers in the state highway departments at last BPR count. On top of this there were 26,000 engineering aides and technicians. BPR has no estimate of how many engineers work on highways for county or city agencies, but it knows it has 1,100 engineers.

Whatever the total, it may or may not be effectively frozen by the questionable clause.

To provide weather protection and easy accessibility to all parts of aircraft during maintenance operation . . .



Hangars Fit Contours of Big Planes

Increasing complexity and ever-varying shapes of military aircraft have led the Air Force to develop a custom-tailored structure, or maintenance dock, designed to fit the contours of specific groups of planes.

In the past, the Air Force has had to build huge, expensive hangars equipped to handle all types of planes or else use temporary facilities that left plane and ground crew exposed to the weather during strip down or did not provide easy access to all parts of planes at the same time.

The new hangar will service the B-52, C-124 and other planes of similar size and shape. It is equipped with movable platforms shaped to fit each of the aircraft types it handles. It will give complete weather protection and still provide easy access to those parts of the planes requiring the 8 hour, post-flight maintenance check or the periodic, week long, strip down maintenance procedure.

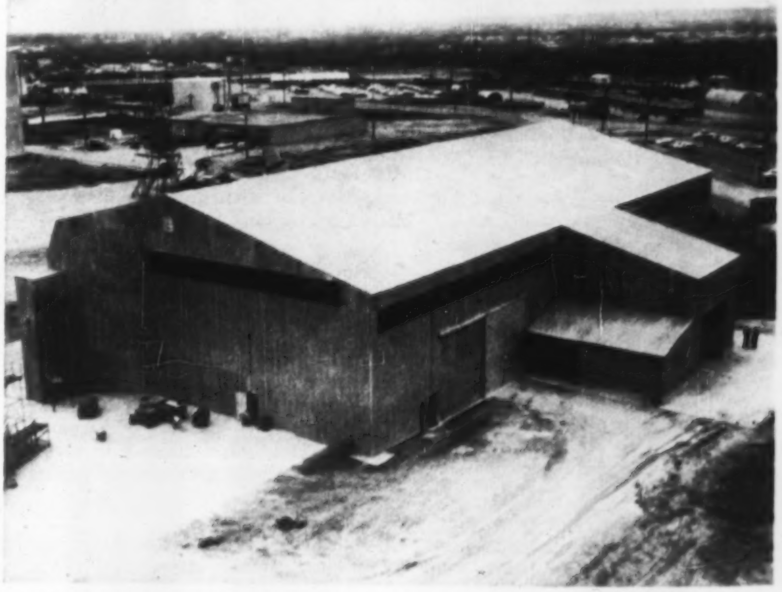
Among the facilities included in the dock are adjustable fuselage closures, two engine removal doors, a built-in carbon-dioxide fire-extinguishing system and an electrically operated bridge crane that will be used for the the removal of airplane engines.

The structure is 85 ft deep, with a projecting nose section of 30 ft. It has a door opening of 198 ft and a door height of 28½ ft, with a tail gate clearance of 32 ft.

Designed and erected by Luria Engineering Co., the dock is a steel-framed structure, enclosed with galvanized steel sheets and insulated with glass-fiber panels.

The new maintenance hangar can be erected in about two months at a cost of less than $200,000.

TAIL of a B-52 is the only part of the plane not enclosed.



NOSE fits into the rear hangar extension. Doors are for engine removal. The small side shed houses auxiliary power equipment.

First for Second Year

Garden State Parkway is safest U. S. tollroad

An official survey has marked New Jersey's Garden State Parkway as the safest of the nation's major tollroads for the second year in a row.

The American Bridge, Tunnel and Turnpike Association reported the fatality rate on the tollroad—which spans the length of the state—was 1.2 per 100 million vehicle miles in 1955 and 1.3 in 1956.

The parkway record for the first quarter of 1957 is two fatalities involving pedestrians, from an estimated volume of 10 million vehicles.

The parkway also rated tops for the lowest accident rate among the tollroads, with an accident rate of 58.2 per 100 million vehicle miles in 1955 and 69.1 per 100 million vehicle miles in 1956.

The national fatality rate for all tollroads averaged 3.8 for 1955 and 3.1 last year, while the accident rates were 153.5 for 1955 and 140.0 for 1956.

Katharine E. White, Chairman of the New Jersey Highway Authority, which built and operates the superhighway, attributes the parkway's safety record to the engineering design of the highway and the general cooperation of the public.

Pennsylvania Governor Seeks Billboard Ban

If Pennsylvania's Governor George M. Leader has his way, there will be no billboards allowed within 750 ft of any Pennsylvania road in the interstate highway system.

In asking the state legislature to promptly enact restrictive measures, the governor said that failure to do so will result in roads that are "marred by the disfigurement and distraction of billboards."

The administration contends that the ban can be enforced by the police power of the state rather than by the complicated highway zoning regulations proposed in the past.

Anticipating "a very powerful opposition lobby," the governor has appealed directly to the people of the state to tell the legislature that they want no billboards beside the new roads.

Flood Control Program Aim of Kentucky Study

A three-month study for developing a broad program of flood control and rehabilitation in eastern Kentucky will give special attention to land-use regulations under federal flood-insurance legislation. The study is being financed by the state and federal government on a 50-50 basis, with David A. Grossman of Blair Associates, Providence, R. I. heading the seven-man team of planning and development experts.

The study will also tie in with one being conducted by the state's Legislative Research Commission to determine what legislation is needed to enable property owners to buy federal flood insurance.

Sonic Boom Damage

Only glass breakage is likely, AF officer says

Pressures exerted on ground structures by shock waves from planes flying at supersonic speed are too low to cause structural damage, according to Col. Roy R. Walker, chief of the Air Force's Community Relations Branch. Window panes, however, may break.

In a talk at a Building Code Conference held at St. Louis University, Col. Walker reported on pressures measured in tests of planes at varying altitudes.

"Where airplanes have dived from 35,000 ft and pulled out at 25,000 ft, we have measured no pressure greater than 5 psf on the ground," he said. "Even when the aircraft descends to 10,000 ft, the recorded pressure does not reach 10 psf. Rarely are faster-than-sound operations carried out at altitudes lower than 20,000 ft. This would mean that we would not expect sonic boom pressures greater than 5 psf to be observed on the ground."

Col. Walker contended that observations of the effects of atomic explosions indicated that even the flimsiest structures were capable of resisting at least 70 psf. And block, brick and frame constructure can withstand pressures of about 150 to 300 psf before damage ranging in magnitude from plaster cracks to wall and roof cracks occurs.

The greatest measurement during the Air Force tests was obtained on a mountain top with an airplane flying 280 ft away. That pressure was 33 psf.

• **Negligible vibration**—The tests also showed that the sonic boom is equivalent to a frequency of about 3 cycles per second. Most structural elements of houses have natural frequencies ranging from 5 to 40 cps, Col. Walker said, and therefore there is no tendency to vibrate at fundamental frequencies or harmonics. It is even more difficult to make the ground vibrate with a sonic boom.

"Glass, however, is another matter," Col. Walker pointed out. "The methods by which it is manufactured are apt to produce internal stresses. Methods of installation and workmanship employed are apt to produce additional internal stresses due to its being bent ever so slightly when installed. Thus, a sharp blow, even though a light one, may shatter the glass. This is not to say that sonic booms will always break windows, because they definitely will not."

Homes Heated by Sun

Design contest begun for solar-heated home

An international architectural competition to obtain designs for a solar-heated residence was announced by the Association for Applied Solar Energy of Phoenix, Ariz.

A $2,500 award and a contract to supply architectural services for the actual building of the winning design are offered as first prize. Awards of $1,500, $750 and $500 will be made for runner-up designs.

The competition, which will be open to architects, designers, and students throughout the world, will close on August 15, 1957.

Prospective contestants may obtain the detailed program for the competition from James M. Hunter, 1126 Spruce St., Boulder, Colo.

The program contains the requirements the contestants must meet, as well as the specifications for the residence and the Phoenix area climate data. A swimming pool and its heating equipment will be included as a part of the design.

The prize-winning residence will be the focal point of a Solar House Symposium to be held in Phoenix late in Sept., 1958.

Oil Firm Lets Contract For Coast Headquarters

Tidewater Oil Co. will begin construction immediately of a $10 million headquarters building in Los Angeles. The contract has been awarded to C. L. Peck, Los Angeles builder and realtor.

The structure will have 427,000 sq ft of space, making it one of the largest commercial office buildings in southern California. It will have a 10 story central tower, and the rest of the building will be 6 stories high, with provision for later expansion to 12 stories.

A 3-level basement, with complete service station facilities, will provide parking for 400 cars.

The steel frame of the building will be bolted. Exterior treatment will be white marble with stainless steel spandrels. The street-floor facade will be black granite.

Claud Beelman & Associates, Los Angeles architects, designed the project.

Goal: Road Engineers

Alberta college starts new engineering school

In the hope of finding cost-saving solutions to highway problems, expansion of research projects will be carried out this year at the University of Alberta, Edmonton, under a new program of post-graduate instruction in highway engineering.

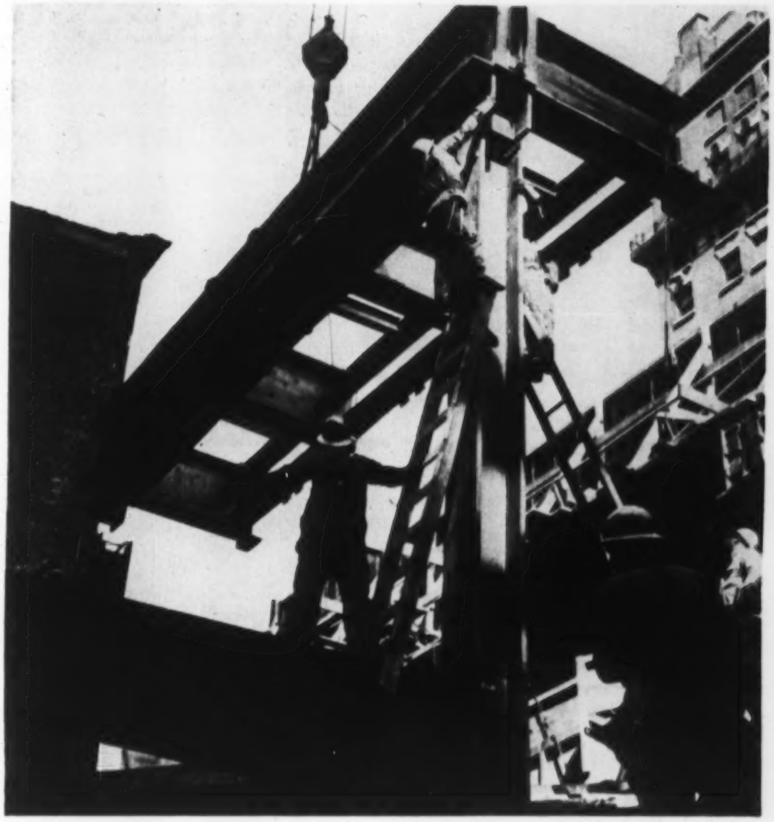
Announcement of the program—first of its kind in Canada—was made in the Alberta government's official publication, "Within Our Borders". The new engineering school will operate under the direction of Dean R. M. Hardy of the Faculty of Engineering, and the research aspect of the program will be in cooperation with the Research Council of Alberta. Two scholarships valued at $2,000 each already have been made available under the sponsorship of the Canadian Good Roads Association.

The overall program is designed to provide expanded facilities for advanced instruction for young engineering graduates "in preparation for any one of many positions in highway engineering."

The Alberta report pointed out that educational, research and extension phases were carefully combined into an integrated program after study of similar projects at various schools in the U. S. and Europe. Although specialized highway courses were available at the university before, they were not closely integrated with needs of the industry.

According to the government publication "research projects concerned with highway problems will be greatly expanded, and it is hoped the course will provide solutions to various problems resulting in substantial savings in construction and maintenance costs." During the new fiscal year expenditure for highway construction and maintenance programs in the western provinces of Alberta, British Columbia, Saskatchewan and Manitoba is estimated at $150 million.

The program will give particular attention to problems resulting from soil and climatic conditions peculiar to western Canada and the Far North. These include: compaction of soils; prevention of frost heaving of soils by chemical treatments; effect of cycles of freezing and thawing on strength of soils; treatments to improve the stability characteristics of base coarse gravels of types having exceptionally high affinity for water; and stabilizing factors of slides of a particular nature that occur along river valleys in northern Alberta, northeastern British Columbia and parts of the Yukon.



20 Tons of Beams Go Up in One Piece

Twenty tons of framing were erected in one piece recently for Deering Milliken Co.'s new 8 story welded-frame office building, now going up in New York. The heavy shop-welded assembly comprises a 31x7 ft section of the second-floor framing. It occurs above a section of the front of the building where bottom-story columns are set back 7 ft.

Shaped like an E but with four instead of three side projections, the welded unit has a main longitudinal girder 31 ft long and four 7 ft long cantilever stubs. The main girder is supported at its ends (see photo) by two of the set-back first-story columns. Floor beams corresponding in location to the cantilever stubs will frame into the main girder opposite the stubs. Second-story columns will bear on the stub extremities, imposing on each a load of about 294 kips.

The building originally was designed as a riveted-frame structure, but Turner Construction Co., the general contractor, exercised an option to substitute welded construction because of the proximity of recording and broadcasting studios.

The project was designed by Carson & Lundin, New York architects. Edwards & Hjorth, of New York, are the structural engineers. Schacht Steel Construction, Inc., of New York, is fabricating and erecting the steel. Schacht's assistant chief engineer, H. W. Lawson, designed the welded connections. Herbert S. Church is Turner's superintendent.

B & O Starts Construction Of $4 Million Fruit Pier

Construction of a new $4 million fruit pier for the Baltimore and Ohio Railroad is scheduled to get under way this month at a site south of Locust Point in Baltimore harbor.

The new pier, which will be a 1 story structure of steel and concrete, will permit simultaneous undercover loading of 63 railroad cars within the pier proper. The motor truck section is designed to permit entering and leaving without crossing the railroad sidings.

The terminal will be equipped with unloading and conveyor equipment specially designed to permit maximum speed and damage-free handling of bananas.

A contract for the substructure and foundations has been awarded to McLean Contracting Co. of Baltimore. Dredging of more than 500,000 cu yd to connect the new facility with the Ferry Bar Channel will be done by Arundel Corp.

Sacramento Redevelopment Pays

Sacramento, California's urban renewal program is combining vision, determination and financial ingenuity in a pattern that might encourage other slum-pocketed cities.

Progress has been uncertain at times; as recently as two and a half years ago, the city's redevelopment plans seemed fated to die from inertia and disinterest.

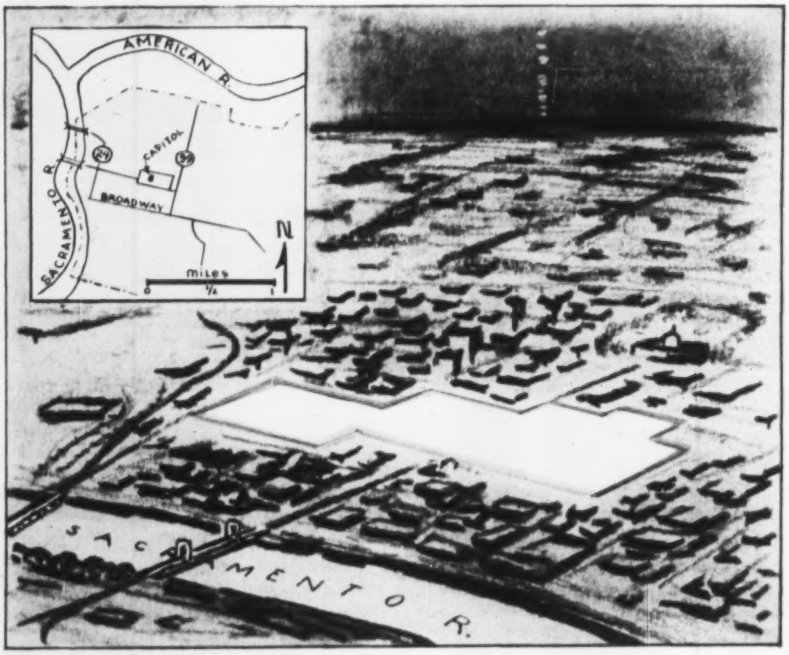
Now, a 15 block, $10.4 million urban renewal program is nearing the construction stage and another 35 block redevelopment is in the preliminary planning stages (see map below). What happened in two and a half years to transform a dying slum clearance program into one of the most dynamic in the nation?

For redevelopment officials, the program was often frustrating. A general bond issue proposal to pay local financing costs for the slum clearance program went down to a close defeat. This could have marked the end of Sacramento's slum clearance efforts. But the planners were determined not to give up. Revenue bonds, which legally could be issued on authority of the City Council alone, were rushed into the breach.

The sale of these bonds last August represented a pioneering step in public finance (ENR Aug. 30, 1956, p. 75). The idea behind the bonds was simple. A certain amount of taxes was collected annually by the city from a deteriorated area. Removal of slum structures and improvement with new private buildings would result in greater assessed valuations in the area and hence in greater tax collections. By continuing to turn into the city's general fund the same amount of taxes collected from the area before improvement, the city would have available "excess tax collections" that could be used to pay off revenue bonds necessary to finance the slum clearance. It was, in short, a way of making urban redevelopment pay its own way.

Because no other city had tried this approach, salesmanship was needed by the Sacramento officials to convince investors that the new bonds represented a safe investment. The salesmanship paid off. Sacramento sold $2 million of these tax allocation bonds to Blyth & Co. of San Francisco at a net interest cost of 4.498%.

Since the bonds will be retired from taxes collected on the greater assessed valuation when the redevelopment is completed, there will be no increased tax burden on local taxpayers. And, they will gain through redevelopment of a slum area where the cost of municipal services has been high.



CITY OF SACRAMENTO: **Initial slum clearance project (outlined in color) is a 15 block area just west of the state capitol and east of the Sacramento River in the city's oldest section. This $10.4 million program is the first stage of a proposed urban redevelopment program that eventually will encompass 62 blocks in the city. Key to the program is a novel financing method. The city will continue to draw present tax revenue from redeveloped area. But "excess taxes" will be used to retire revenue bonds.**

• **Sparkplugs**—Two men stand out particularly in Sacramento's program, which is now rapidly nearing the construction stage. (Demolition of slum structures has been under way for several months and the first sale of land for redevelopment is expected in May or June.)

Sparkplugs of the urban renewal program are Fred G. Grumm, a civil engineer who is chairman of the Sacramento Redevelopment Agency, and Joseph T. Bill, a professional planner who is executive director of the agency.

Mr. Grumm retired a few years ago as deputy state highway engineer after 28 years of service with the state and since then has devoted much of his time to the Sacramento redevelopment project.

The Sacramento Valley Engineering Council earlier this year recognized Mr. Grumm's continuing public service, honoring him as the Sacramento Valley civil engineer who performed more civic work without compensation than any other member of the profession.

The program's other sparkplug, Joseph T. Bill, received a Bachelor of Science degree from Yale University and a Master's from Harvard. His studies, which included planning, architecture, landscape architecture and fine arts, have been utilized in the field of city planning since 1940. He became executive director of the redevelopment agency in Sacramento in August 1951.

While Messrs. Grumm and Bill are acknowledged as the driving forces in the Sacramento program, they are quick to share the credit.

Mr. Bill, for example, feels that a major factor in the program's success to date is that all five members of the redevelopment agency have been in the work since its inception and have been in agreement on a principal goal—removal of blighted areas that are located within the shadow of California's Capitol Building.

"All five agency members are going into their sixth year working together," Mr. Bill points out. "They have made one hell of a good team."

In addition to Mr. Grumm, agency members include Fred Read, vice chairman, and general manager of the California Fruit Exchange; Herbert Jaqueth, chief of the allocations division, State Department of Finance and one time

Its Way

city planning engineer; H. Harold Leavey, vice president of the California Western States Life Insurance Co., and Mrs. Pat Clark, a realtor who is active in civic affairs.

• Before victory, a defeat—These battle-scarred veterans of Sacramento's war against the slums grasped thorns before laurels. Sacramento's redevelopment project first was proposed as a 62 block slum clearance program in an old section of the city west of the Capitol Building and east of the Sacramento River, which forms the westerly boundary of the city. Early consultants on planning were Neutra & Alexander and Harold F. Wise (ENR March 1, 1951, p. 96).

Opposition to the plan developed quickly and became serious enough to cause delay in City Council action. Conceding a temporary defeat, the redevelopment agency trimmed its sails. As an alternative to the 62 block proposal, it selected a 15 block structural graveyard of dilapidated homes and flophouses.

An anti-redevelopment group fought this plan also. But, the City Council, backed by the redevelopment agency, powerful civic organizations and the city's newspapers, held fast against complete abandonment of a slum clearance program. This time, the agency was authorized to go ahead with its plan.

Encouraged, redevelopment officials waited for the financing. A general obligation bond issue election was called, with city officials hoping for a low interest rate. But, the bond issue failed. A two-thirds majority is required; a majority of voters approved the issue—but not enough.

Now the entire program was fighting for its life again. This time the resourceful redevelopment group came up with the idea of the revenue bond sale, even though it realized this would result in higher financing costs. From that point on, the program began to roll.

Novelty of the revenue bond financing was stressed last August by H. Harold Leavey, a member of the redevelopment agency, who commented that "this means of financing is new to California and to the United States. It was enacted into law in 1951 and specifically approved in an amendment to the constitution of California.

"Forecasts have been made that numerous other California cities will follow similar procedures. It is also expected that a number of other states will enact legislation in financing their redevelopment projects."

A LEADER in the Sacramento urban renewal campaign, Fred G. Grumm, shown at right, wins plaudits from two top officials, Mayor Clarence L. Azevedo, at left, and Gov. Goodwin J. Knight, center, as initial demolition begins for the first 15 block project.

• Credits and cash—Estimated gross cost of the project, which now involves 14 blocks (one block was acquired by the state for a state employees' parking lot), is $10.4 million. The redevelopment agency hopes to realize $5 million from sale of the cleared land, making the net cost of the project to the city about $5.4 million.

Through the Housing and Home Finance Agency, the federal government will provide up to $3.6 million as a grant. The balance of $1.8 million will be provided by non-cash grants (amounting to $502,000) in streets, electrical facilities and utilities provided by the city and the Sacramento Municipal Utility District; the agency bond issue will provide the remainder.

While dwarfed by some other urban renewal projects (such as New York City's mammoth proposed Lincoln Square redevelopment), this first Sacramento project could have a significance far beyond its cost.

When demolition of the first building for the project began recently, Gov. Goodwin J. Knight heralded the step as an indication of the city's brilliant future. As the city enters its second century, the governor sees a future in which Sacramento must cope with an influx of new residents and new industries, with redevelopment serving as a bridge between the past and the future.

As if to underscore the governor's theme, Sacramento's redevelopment officials were quick to pick up the bulk of the once-compromised 62 block plan.

The follow up to the initial project will be a 35 block redevelopment extending from 10th St. to the Sacramento River, flanking the project already under way. This would complete all but 10 of the original 62 blocks marked for renewal.

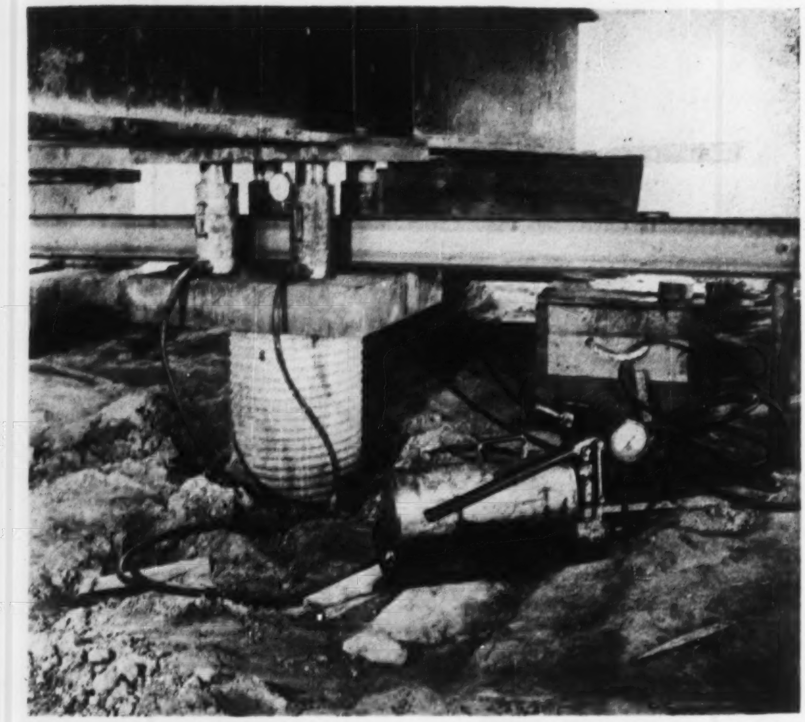
Mr. Bill is confident of this second stage redevelopment. He feels that success of the initial project will produce a more favorable climate for the second.

And, the director does not feel that the tight money situation will be an obstacle to the Sacramento program.

Investors who purchased the original revenue bonds still are interested in the program, he asserts. And, he points to the faith of Blyth & Co. in purchasing the untried bonds as an indication of future successful financing.

When the revenue bonds were sold, the SACRAMENTO BEE, a strong supporter of redevelopment, commented editorially:

"It is one thing for a planner, so often called a long-haired dreamer, to have faith in better, cleaner cities. But the haircut of the planner looks mighty practical when a cautious investor buys the plan with cash."



This pile test was different—it was a . . .

Load Test During an Earthquake

Pile load tests are not particularly unusual. But such a test during an earthquake is, which is why the facts with respect to a test being conducted at the San Francisco airport on March 22 are worth recording. At the time of the biggest shock, 60 tons of load was on the test pile. And the full 140 ton maximum load was in place during aftershocks, which measured as much as 3 on the Richter Scale as compared with 5.5 for the main shock. Yet, despite the location of the airport on bay front land almost directly opposite the presumed epicenter of the shake, which was on the ocean side of the San Francisco Peninsula, the resulting dynamic forces had no noticeable effect on the pile.

The test was being made on an 88 ft concrete pile cast in place in a step-tapered steel shell equipped with a 20 ft tip of 10¾ in. OD, ¼ in. thick pipe with a flat plate on the bottom.

Six hundred of these piles will be used to support a 310 x 360 ft double cantilever hangar being built for United Airlines.

The engineers designed the foundations for a 70 ton pile loading, and since the piles penetrate 5 ft of fill and 35 ft of soft bay mud into silty sand and blue-gray silty clay, they develop their strength by friction in the firmer strata. To insure that the test pile would reach this strata it was driven with a 32,500 lb single acting steam hammer.

The test method was planned to check the bearing capacity of the deeper soils.

To eliminate the frictional support of the upper soils six rotary drill holes each 70 ft deep were placed around the periphery of the pile and left filled with drillers mud. Thus the test was actually made on the lower 18 ft of the pile.

The test load was applied in increments of 20 tons with a waiting period between increments to allow the pile to settle. Full settlement at maximum load was just under ½ in. After the load was removed, the net settlement was less than 0.1 in. And it is believed that the settlement is due to deformation of the pile, with no additional penetration of the pile tip and no effect from the earthquake.

The test was conducted by the Raymond Concrete Pile Co., which holds a contract for the hangar piles. Boyd Begg is superintendent.

The hangar was designed by Skidmore, Owings & Merrill, architects, and H. J. Brunnier, consulting structural engineer. Charles H. Lee was the foundation engineer.

The general contract for the project has not yet been let.

Corps Researchers to Test Road Construction on Ice

Selected personnel of the Army Engineers Waterways Experiment Station, Vicksburg, Miss., are enroute to Greenland for the study of road construction on ice.

The Vicksburg expedition, known as the Army Mobility Research Center and staffed by civilian personnel, will begin operations about May 1 and continue them until about Sept. 1.

The research is directly concerned with two projects. One is to develop and design construction techniques for earthfilled roads on glacial ice surfaces. The other is to provide data for determining the "traffic-ability" of Greenland icecap snows for existing vehicles.

The earthfilled roads are needed for easy access from the toe or an ice ramp to an area on the icecap where erosion and differential melting of the ice ramp decreases to the point at which vehicles can move with greater ease. This project has been under way for the past three summers and the construction phase is substantially complete (ENR Feb. 7, 1957, p. 28). Now major effort will be devoted to observing performance. Data collected will be used to further strengthen the correlation established to date, and to locate an access road from a point in southern Greenland to a point on the edge of the icecap.

The second project calls for testing a large variety of vehicles on the icecap to determine the operating capabilities of various snow types.

On-Job Training Started For State Road Engineers

In an effort to attract and hold engineering graduates, the North Carolina State Highway Commission will put young engineers through a 27 month on-the-job training course. Each trainee will spend several months in nine key highway sections, learning the various phases of work.

Chairman A. H. Graham stresses that the training program is a pilot operation and that it is his hope that in-service training will be a continuing operation and can be expanded into other phases of highway work.

The training program being developed for graduate engineers is in addition to a 24 week in-service program announced recently for construction and location employees in the Engineering Aid I and II classification, many of whom are not college trained. The men will be selected by division engineers on the basis of ability and potential for development, and must have had a minimum of six months' highway service.

CONSTRUCTION COST CUTTERS

In Home, Church, School, Institutional, Industrial and Commercial Buildings

SHEFFIELD

ARMCO

STEEL JOISTS

Standard and Longspan

Sheffield Open Web Steel Joists serve three ways in this 1¼-million-dollar structure. Roof purlins and ceiling joists are Sheffield standard (shortspan) joists. The pitched-roof beams are Sheffield longspan joists which have extended ends for eave support.

Sheffield Standard Steel Joists are adaptable to the application of any type floor, roof or ceiling. Sheffield makes a complete line of anchoring accessories, including extended ends for cantilever eave support. Standard joists provide clear spans up to 40 feet wide.

Imaginative design: Allowing steel roof framing to project down into room space (in both residential and commercial building) permits economy of lower walls without reduction of floor-to-ceiling height, since exposed inside roof provides ceiling above instead of at the bottom of joists.

Sheffield Longspan Steel Joists make possible larger areas of wide open floor space, uninterrupted by interior columns. They allow unobstructed spans up to 96 feet wide, with minimum dead-load and maximum non-concentrated liveload capacity.

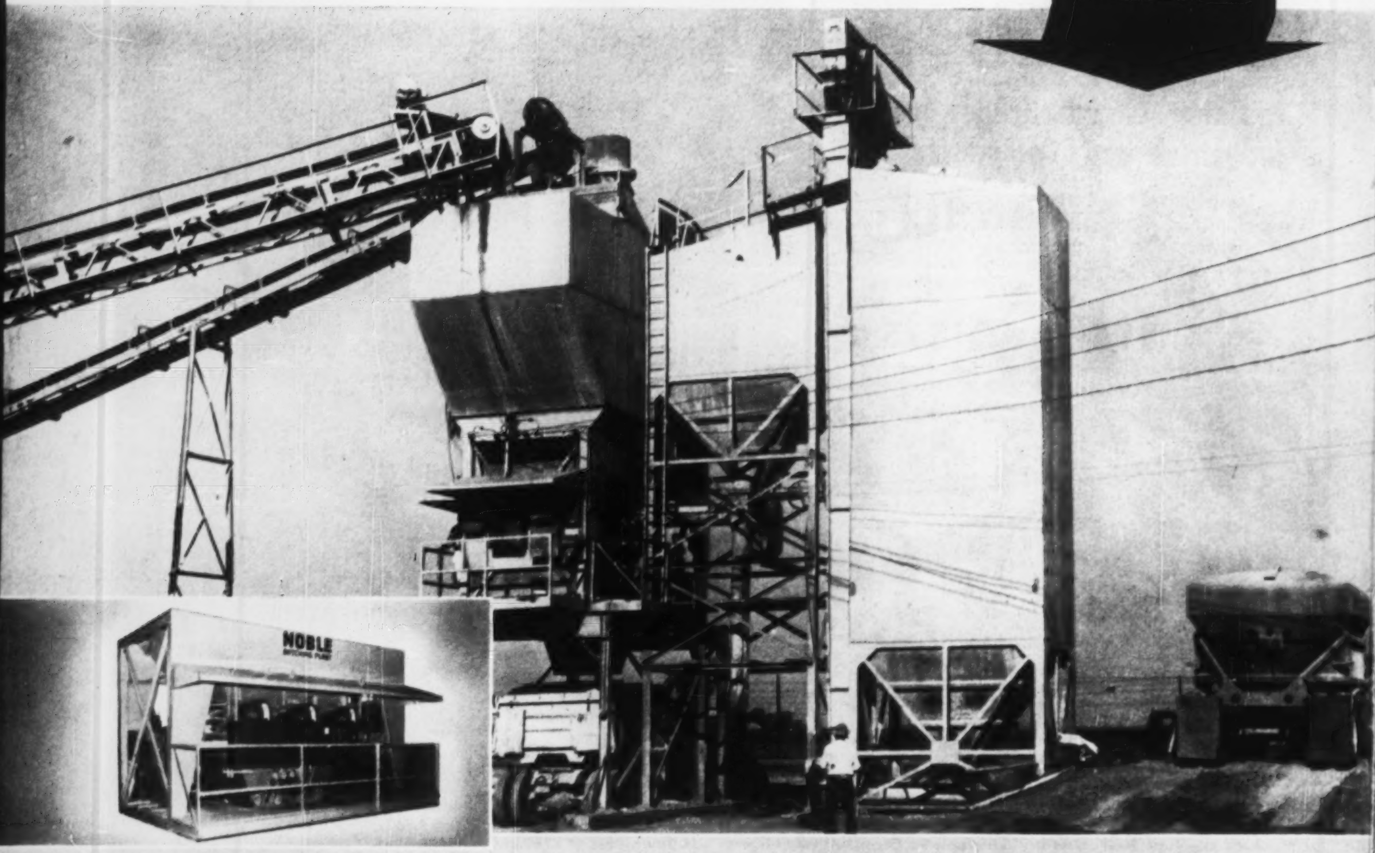
Better, stronger roofs and floors go up faster when you build with Sheffield Open Web Steel Joists. They're quickly set . . . and immediately provide a working platform. Electrical, plumbing, steamfitting and air-conditioning crews swing into action sooner to string their lines and ducts through the open webs of the joists.

Right on their heels start the roofing, floor-laying and plastering crews. No need for slow, expensive falsework. You have everything in your favor for on-schedule work progress and on-time completion.

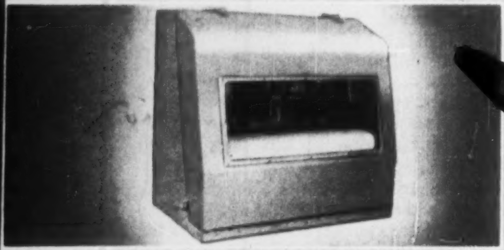
So much for on-the-job savings. There's more: The combination of lightweight and high strength of Sheffield joists makes possible important design economies . . . beginning with the foundation and going right up to the roof. Lighter columns and walls. Less dead weight.

SHEFFIELD DIVISION ARMCO STEEL CORPORATION SHEFFIELD PLANTS HOUSTON • KANSAS CITY • TULSA

NOBLE TRIPLE BATCHER produces one operator in 1 stop or



Bin center section can be truck-hauled without removing weigh hoppers, operator controls or any other components. All electrical switches are mounted in this unit and connections are made by simple twist-lock couplings.



3 pen recorder, optional equipment, produces record of each material as required by Corps of Engineers specifications. Adaptable to 1 or 2 stop set-up.

✓ ***Weighs 3 materials for a single batch at one time!*** *(sand, coarse aggregates, cement)*

✓ ***Batches accurately to rigid specifications!***

[illegible]***pplies 2 or 3 dual drum pavers!***

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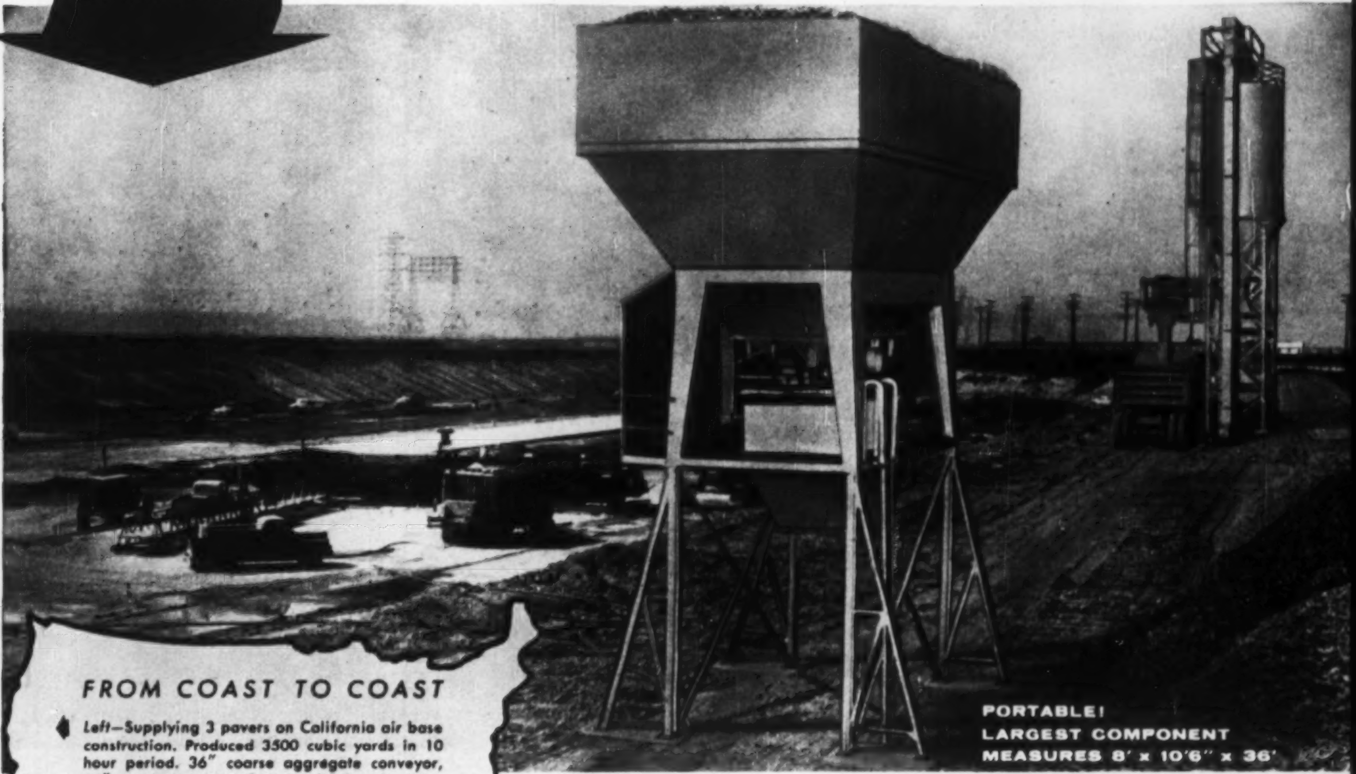
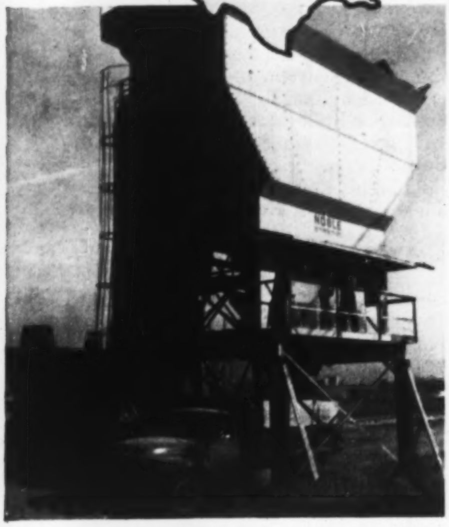
over 300 yards per hour with 2 stop set-up



FROM COAST TO COAST

Left—Supplying 3 pavers on California air base construction. Produced 3500 cubic yards in 10 hour period. 36" coarse aggregate conveyor, 24" sand conveyor. Cement silo has facilities for direct loading of cement spreader trucks.

Below—On New England paving job.



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Ohio highway paving

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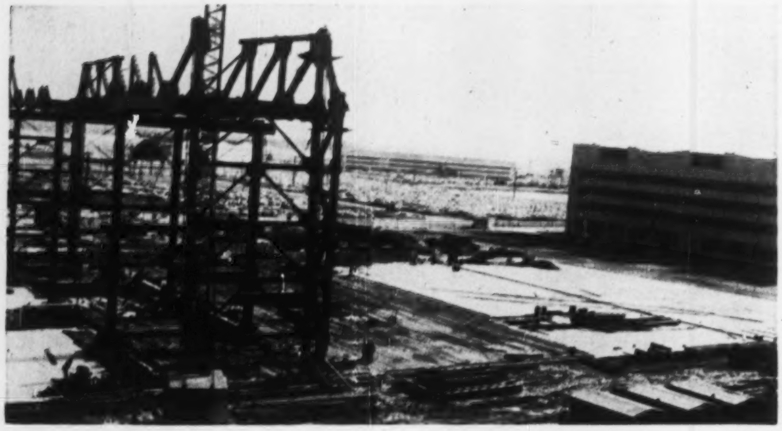
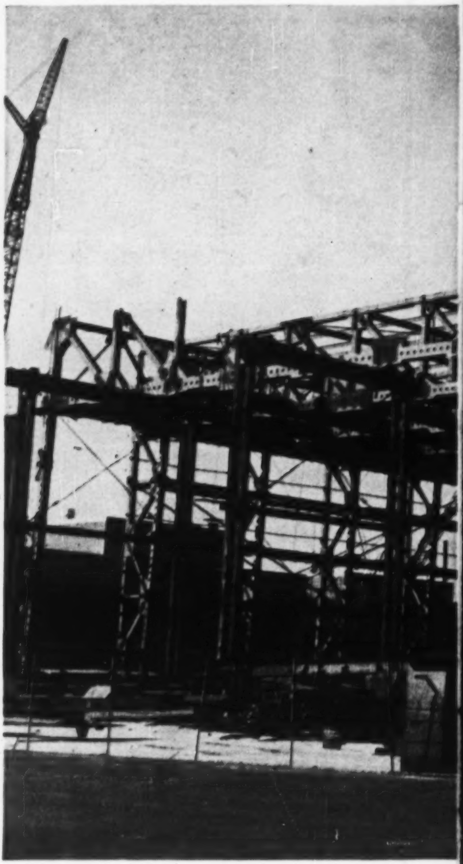


Designed for unusually heavy loads . . .

. . . the frame of the new structural test building at the Martin aircraft plant in Baltimore will anchor the numerous load lines that simulate flight loads on a plane.



DENSE FRAMEWORK contains about 130 lb of steel per sq ft of floor area, 8 to 10 times as much as most one-story frames.

Building Frame Is Also Test Rack

Erik W. Wolf
Vice President
Green Associates, Inc.
Baltimore, Md.

An unusual dual role is assigned to a building now under construction in Baltimore for the Glenn L. Martin Co. The steel-framed structure will serve not only as a shelter, exposed to the usual weather loads, but also an as aircraft-test frame, subject to several times the loads ordinarily imposed on one-story buildings.

Every aircraft manufacturer has structural-test facilities, of course; he uses them to simulate stress conditions prevailing in flight by statically loading various points on an anchored-down plane.

The forces are applied by means of jacks in wire-rope load lines, which run from load-application points on the plane to some kind of test structure that supplies the necessary reactions. Usually, though, the structure is a steel frame erected inside a building—not the building frame itself.

• Four schemes studied — Spacewise, Martin's needs were for a building some 200 ft square, post-free inside and clear overhead to a height of 65 ft. After studying four framing schemes meeting these requirements, Green Associates, Inc., Baltimore engineers-architects, adopted a system based on two-hinged trussed arches as the main supporting bents.

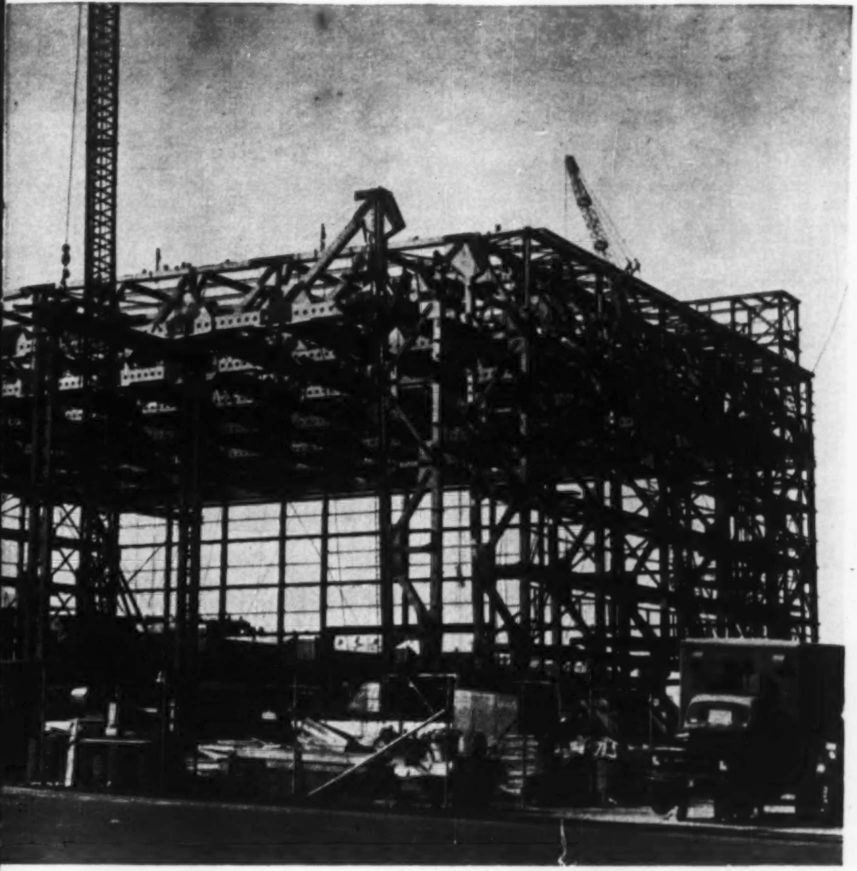
Approximately rectangular in elevation, the arches consist of Warren-type leg trusses and parallel-chord Pratt trusses overhead (slightly pitched on top for drainage). The arches span 205 ft c-c of base hinge pins and rise 66 ft from the pins to the lower-chord level of the Pratts. Overall width and height of the building are greater, however, because of the depth of the trusswork (8 to 10 ft in the legs, 18 to 20 ft overhead). The length of the building is 210 ft. And it incorporates eight arches 30 ft c-c.

• Heavy design loads—Although the dimensions of the building are not especially remarkable, its load-resisting capabilities are unusual, including the following:

The slab can resist uplift of 2 million lb (1,250 psf) on any 40x40 ft interior area or 3 million lb (1,000 psf) on any 30x100 ft interior area; anchor plates set into the slab every 10 ft in both directions can each resist 100,000 lb uplift and 40,000 lb horizontal shear; anchor rails that traverse the slab every 10 ft in one direction are good for 10,000 lb per lin ft uplift; the roof trusses are designed to take a series of concentrated loads totaling 825,000 lb (per truss) on any five consecutive panel points (panels are 20 ft).

Besides the test loads, the structure is also designed for various combinations of the following: 20 psf snow load, 20 psf wind load, two 5 ton cranes at top-chord level, two 20 ton cranes at bottom-chord level, temperature stresses, bending moments due to frame distortion, and stresses due to differential displacement of pins.

• Dynamic unloading—An additional aspect of design was the dynamics of sud-



for Aircraft

denly unloading the test structure. It was necessary to analyze the effects of releasing the entire 825,000 lb from the trussed arches in 0.15 sec. The vibrations resulting from such rapid unloading were found great enough to cause stress reversals and significant stress increases.

• **Slab construction**—The 1,250 psf uplift on the slab would dictate, it would seem at first look, a minimum concrete thickness of 8 ft, with no allowance for a safety factor. In analyzing the slab, however, the designers took advantage of the restraint exercised on the immediate test area by surrounding slab areas and were able to keep the thickness down to 5 ft.

The most exacting task in construction of the slab was setting the anchor plates. Each of the 23 in. steel disks exposed at the finished slab surface is the 2½ in. thick top of a 6 ft high, bird-cage-like assembly. The bottom and sides of the cage—respectively, a 24 in. steel disk ½ in. thick and eight 2 in. round bars, 6 ft long—are embedded in the concrete. The specifications called for setting these assemblies—amounting to 420 in all, topheavy and weighing about 1,000 lb each—with no more than 3/32 in. deviation from line and grade.

• **How anchors were set**—The bottom disk, with three leveling bolts projecting below it, was actually a leveling plate for the assembly. Nevertheless, it was difficult to set the units without very rigid supports. The contractor, therefore, built deep timber trusses and suspended the anchors from them. At the bottom of each suspended assembly, in a 2x2x2 ft pit, he placed concrete to embed and support the leveling bolts after the line and grade of the anchor plates had been checked.

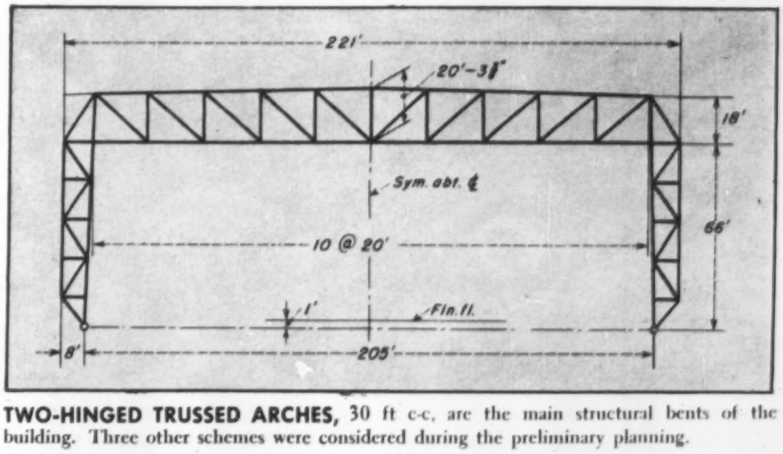
Similar accuracy of placement was required for the anchor rails, which traverse the slab on 10 ft centers, staggered between the rows of anchor plates. The latter, installed first, proved to be a convenience in placing the rails. A system of steel framing was tack-welded to the anchor-plate assemblies and served as temporary support for the rails.

After making a final check on the locations of the anchor plates and rails, the contractor placed the slab concrete, casting it in sections about 40 ft square. The 5 ft structural slab was brought up to a level 8 in. below the tops of the anchors, and a wearing surface was cast in the remaining depth.

• **Frames weigh 130 psf**—Although the 5 ft slab is an unusually thick one for the floor of a one-story building, the effects of designing for the heavy test loads are even more apparent in the amount of superstructure steel. Instead of the usual 12 to 15 lb of steel per sq ft of floor area, the building is framed with nearly 130 lb per sq ft. All told, it contains more than 3,000 tons of structural steel.

The large tonnage is not too surprising, though, considering the magnitude of the loads. To produce the same direct chord stresses at the trussed-arch midspan as those produced by the concentrated design loads applied symmetrically about the arch midpoint, it would take a uniform load of about 6,500 lb per lin ft on the entire span. This is roughly 10 times the lane load of a highway bridge. (The uniform-load equivalent of H20-S16 loading is 640 lb per lin ft of 10 ft lane.)

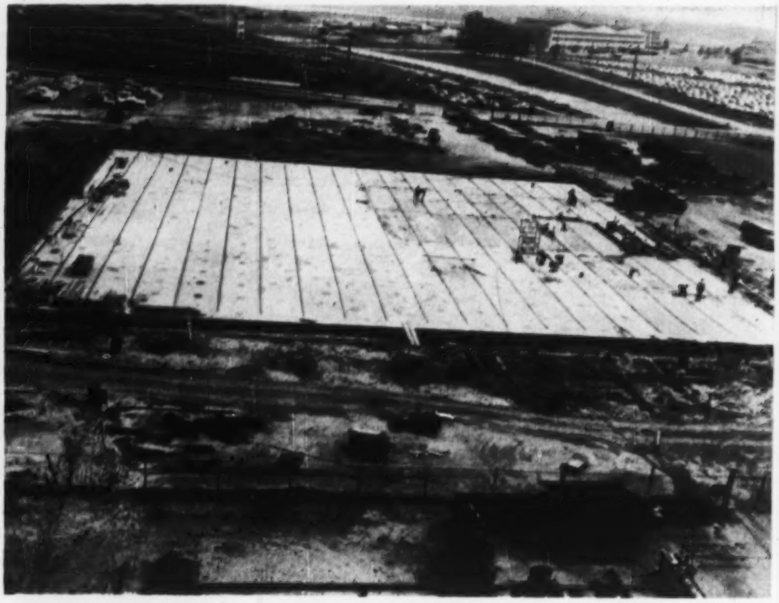
• **3-D loading**—Furthermore, the system of test loads applied to the building



TWO-HINGED TRUSSED ARCHES, 30 ft c-c, are the main structural bents of the building. Three other schemes were considered during the preliminary planning.

. . . Aircraft tests involve loads in all directions

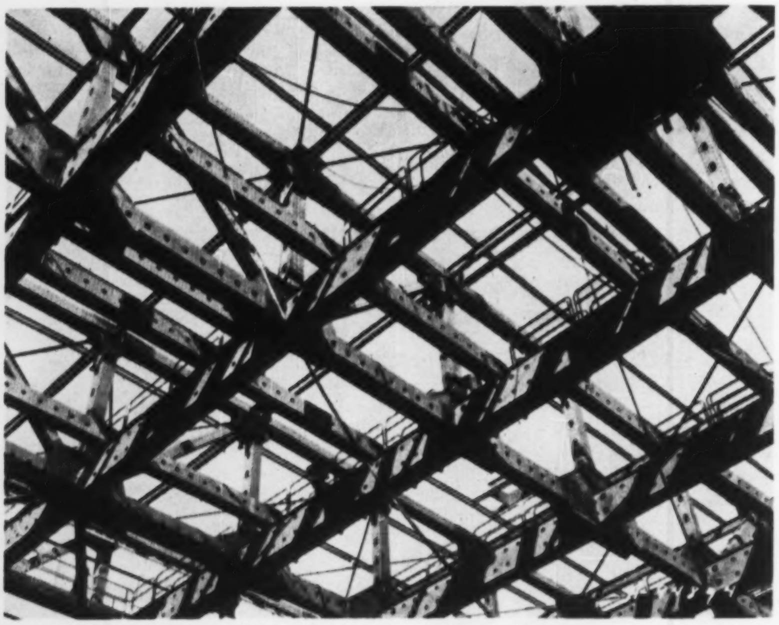
ANCHOR PLATES, aligned and leveled to 1/32 in. accuracy, were embedded in a . . .



5 FT FLOOR SLAB—it contains 420 anchor plates and 4,000 ft of anchor rail. Plates are designed for 100 k uplift, 40 k shear; rails for 10 k uplift per lin ft.

frame will be three-dimensional. The wire-rope load lines will be so positioned at various times on the aircraft under test that they will impose load components similar to those experienced in takeoff, flight and landing. Attached directly to points anywhere along the length of the bottom chords of the overhead trusses, or the inside chords of the leg trusses, or the combination beam-struts between adjacent bottom chords, the load lines will impose on these members not only axial loads but also torsional loads and bending about both axes. This led to the design of welded box sections for these members.

• **Member sizes** – Bottom chords are generally 16x20 in., built up from plates. The inside chord of the leg truss is a 14 in. wide-flange section with 1x15 in. plates welded across the flanges. The box girders that serve also as struts are built up from plates to a width of 21 in. or 27 in. and a depth of 42 in.



FRAMING at bottom-chord level of trussed arches is drilled with thousands of $\frac{13}{16}$ in. holes for the bolt-attachment of test-load lines. Larger openings are hand holes.

Splices in these members are held to a minimum because of the requirement that almost 100% of the area of the members be reserved for the attachment of test-load lines. There are no splices at all in either the box girders or the inside chord of the leg truss, and the lower chord of the roof truss is spliced only twice in the 200 ft distance between its intersections with the legs.

• **Bracing**—Except in the bottom-chord plane, the trussed arches are braced conventionally. Both outside and inside chords of the leg trusses are vertically K-braced, and horizontal X-bracing is used in the top-chord plane of the overhead framing. Special considerations, however, ruled out the installation of diagonals in the bottom-chord plane except in the end bays and in panels adjacent to the leg trusses along the sides of the building. Accordingly, these end bays and outer panels were braced with a horizontal single-Warren type of framing, and the remainder of the lower-chord-bracing function was assigned to the box girders.

• **Erection**—The steel erectors built up the trussed arches on steel falsework frames. Using three of the frames to support an adjacent pair of arches, they erected first the inside chords of the leg trusses, next the bottom-chord members of the overhead trusses, and then the webs and remaining chord members. They made all field connections with high-strength bolts.

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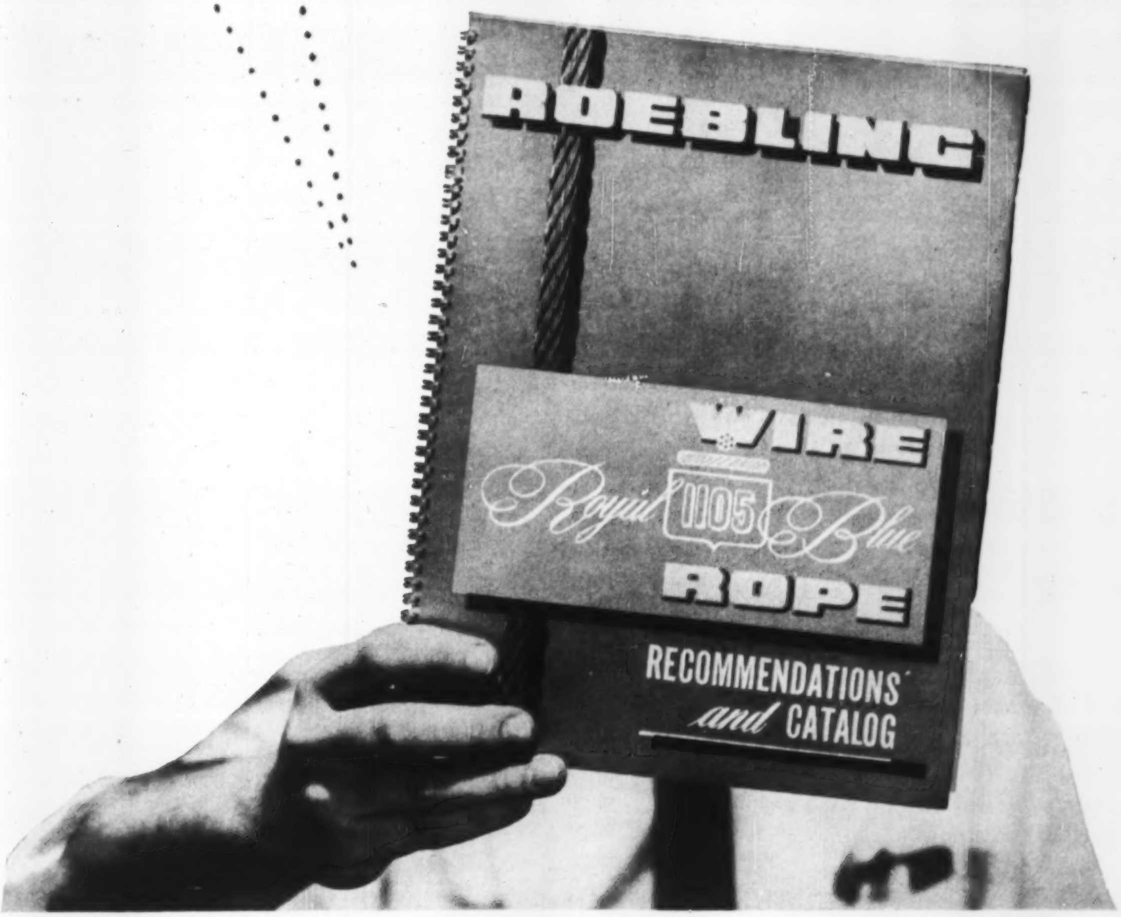

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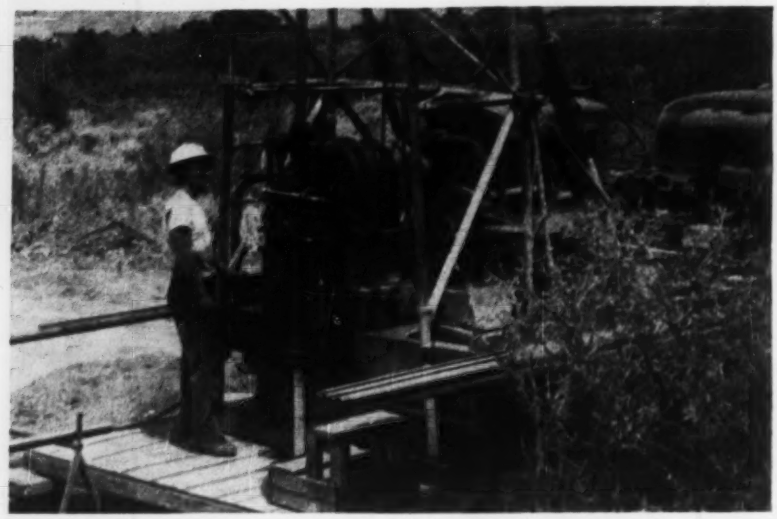

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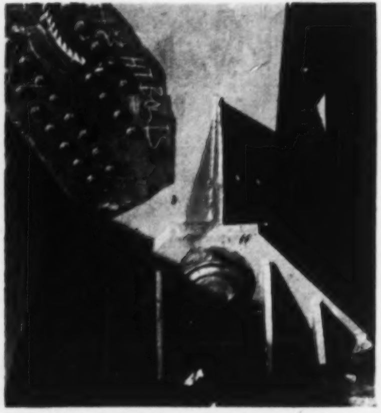
. . . Martin test building



HINGE CONNECTION at base of trussed arch is a steel pin 8 in. in diameter.

HIGH-STRENGTH BOLTS, 90,000 in all, were used to make all field connections.

As a hedge against erection difficulties due to possible errors in locating anchor bolts, the base-hinge assemblies of the arches were designed to be field-welded to bed plates, the latter to be installed before the erection of the arches, and the hinge assemblies to be installed at the same time as the arches. This method demanded less precision than would have been required if the hinge assembly had been fabricated with holes that had to match the locations of previously placed anchor bolts. The bed plates, about 4 ft square and 1 in. thick, were anchored to the top of the foundations by means of sixteen 1 in. hooked bars each, welded to the bottom of the plate and embedded in the concrete.

William T. Lyons Co., Baltimore contractor, is constructing the building at a cost of about $3.1-million. American Bridge Division of U. S. Steel Corp., of New York, fabricated and erected the structural steel. C. T. Blake is the engineer in charge for Green Associates, Inc.

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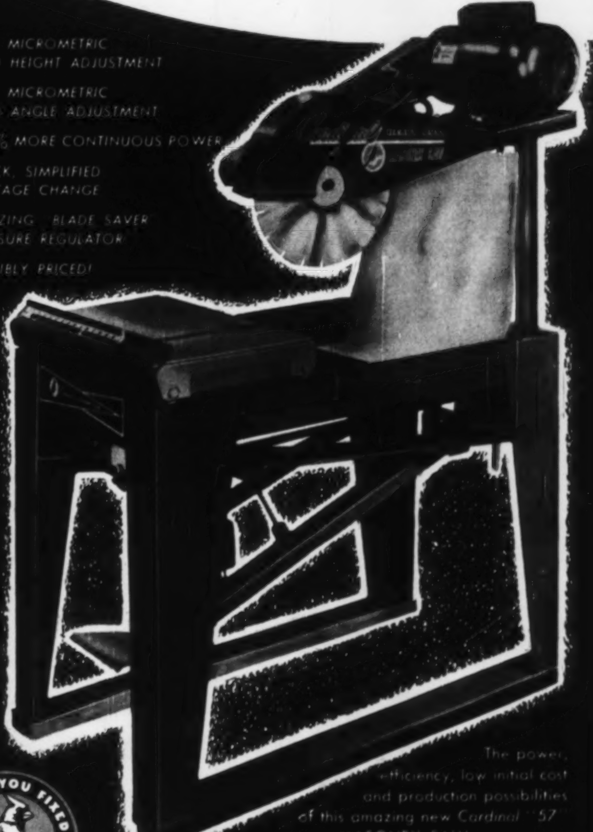

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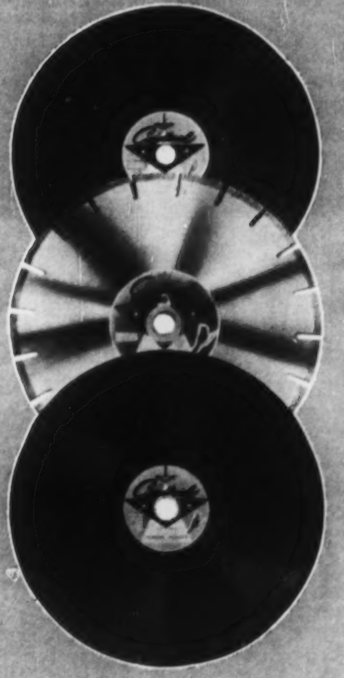

WORKING SIDE BY SIDE, the two Worthington Dual Drum Pavemasters divide the job—the outside unit handling the paving from the center of the strip back and the inside unit paving from the edge to center.

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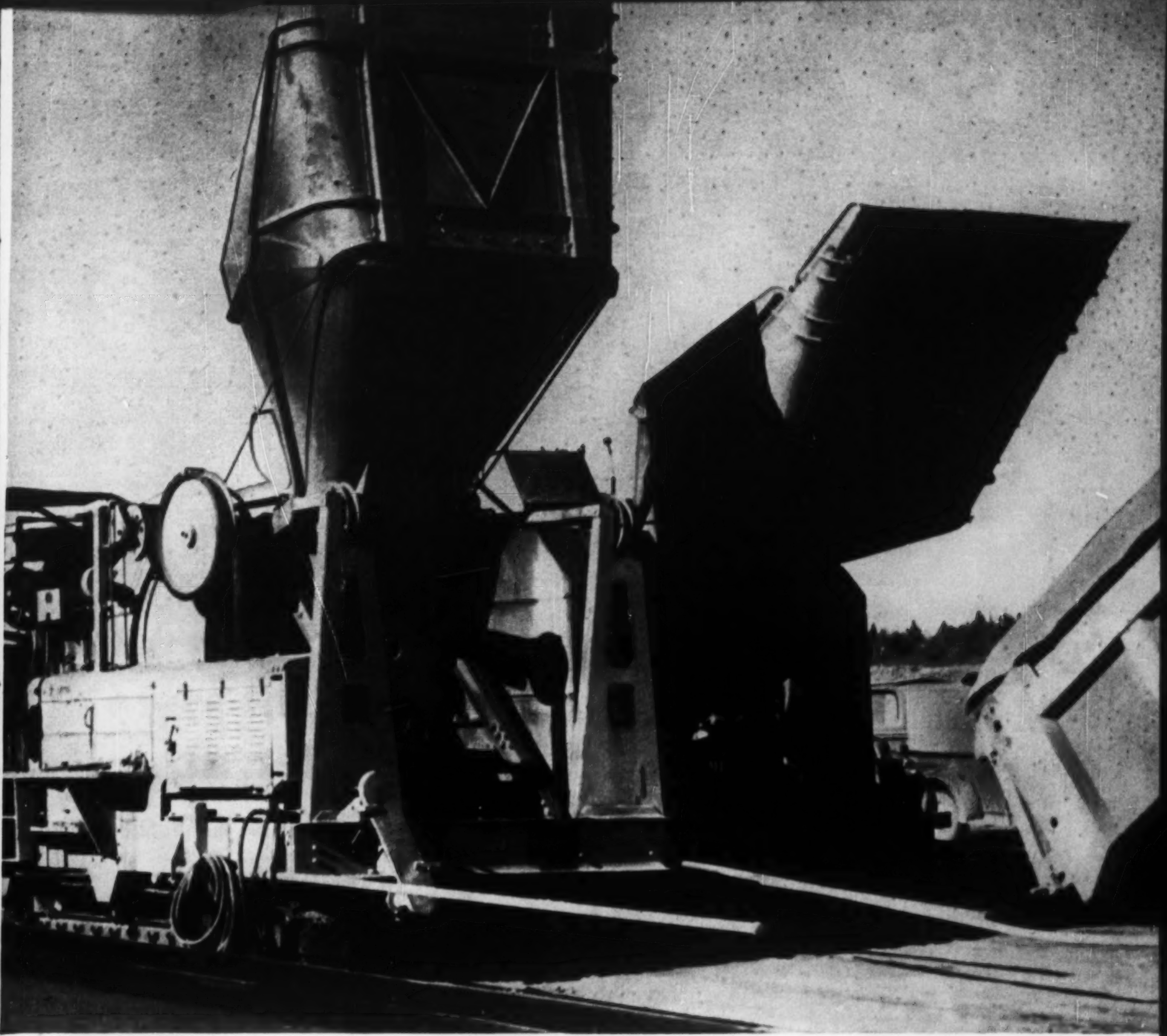


EVER SEEN” Reports leading New England contractor about 2 new Worthington 34-E Dual Drum Pavemasters

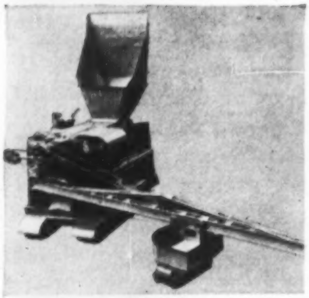
Two new Worthington Dual Drum Pavemasters are setting the pace for a ten-and-one-half million dollar, 13,500 ft. runway at Dow Air Force Base, Bangor, Maine.

Working side by side, the Pavemasters are “the fastest operating pavers I've ever seen,” according to general contractor J. R. Cianchette. He explains that due to the pace set by the pavers, with a 6 to 7 second skip operation, a 6 to 8 second hydraulically-controlled transfer operation and a 6 to 8 second hydraulically-controlled discharge chute operation, it was necessary to keep his batch trucks rolling on an accurately-timed schedule.

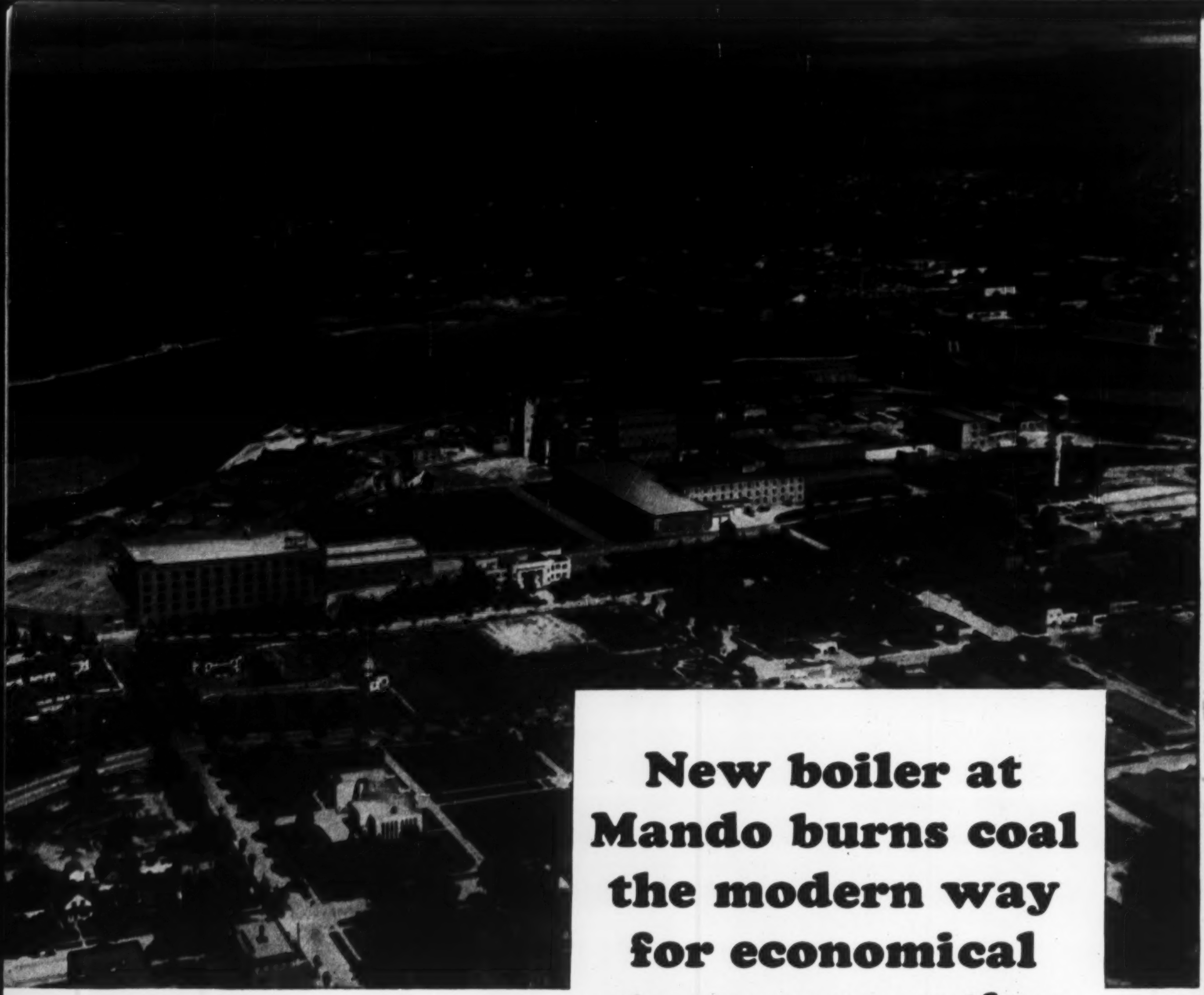
The tremendous scope of the job emphasizes the necessity for paver speed. Between now and the 1958 completion date of the project the pavers and crew of 150 will place an estimated 255,000 cubic yards of concrete!

In addition to speed, the new Worthington 34-E Dual Drum Pavemaster has many new money-saving features. No less than 17 major improvements have been incorporated into its design and manufacture. For the full story, write for your copy of descriptive bulletin 1270-B1. Address Section R-73, Worthington Corporation, Harrison, N. J.

WORTHINGTON



High bucket speed—256 feet per minute both forward and reverse—speeds operation, increases output on the new Pavemaster.



New boiler at Mando burns coal the modern way for economical steam generation

Consult an engineering firm

Designing and building hundreds of heating and power installations a year, qualified engineering firms can bring you the latest knowledge of fuel costs and equipment. If you are planning the construction of new heating or power facilities—or the remodeling of an existing installation—one of these concerns will work closely with your own engineering department to effect substantial savings not only in efficiency but in fuel economy over the years.

facts you should know about coal

In most industrial areas, bituminous coal is the lowest-cost fuel available • Up-to-date coal burning equipment can give you 10% to 40% more steam per dollar • Automatic coal and ash handling systems can cut your labor cost to a minimum. Coal is the safest fuel to store and use • No smoke or dust problems when coal is burned with modern equipment • Between America's vast coal reserves and mechanized coal production methods, you can count on coal being plentiful and its price remaining stable.

Mando—the Minnesota and Ontario Paper Co.—is keeping pace with continuing production expansion. The firm recently installed in its plant at International Falls, Minn., one of the largest modern single-pass boilers in the pulp and paper industry. It is designed to produce 240,000 lbs. of steam an hour, bringing the mill's steam generating capacity to 960,000 lbs./hr. The new boiler has 22,500 sq. ft. of heating surface and required 300,000 lbs. of steel in its construction. It will use 775,000 gallons of water a day and, for economy, will burn pulverized coal as a primary fuel—300 tons daily!

For further information or additional case histories showing how other plants have saved money burning coal, write to the address below.

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FOR CHICAGO:

Voters to Weigh $113 Million Bond Issue

Chicago voters will be asked to approve $113 million worth of new bond issues at the June 3 judicial election this year to cover a variety of public works improvements. A 13 point, three-year program covers sewerage, street lighting, fire protection, recreation, community conservation, slum clearance, mass transportation, garbage disposal, health and safety.

The three largest items, each calling for an expenditure of $15 million, are bridges and viaducts, airports, and street lighting. Next in size, with a price tag of $10 million each, are improvement to transit facilities, land clearance, and community conservation. Garbage disposal improvements will cost $9 million, and an equal amount has been earmarked for municipal buildings such as police and fire stations. A total of $8 million is recommended for construction of additional sewers, and $6 million for playgrounds and recreation. The two smallest items in the program are $1 million each for fire department equipment and the houses of correction.

• **Bridges and viaducts**—The $15 million earmarked for bridge and viaduct construction is urgently needed for major repairs, rehabilitation and construction of new bridges and viaducts to ease congestion and facilitate traffic movement.

It will permit the replacement of such old landmarks as the Dearborn St. bridge built in 1907, the Fullerton Ave. bridge, constructed in 1895, and the Halsted-Chicago viaduct over railroad yards, which was built in 1884.

• **Airports**—The proposed $15 million bond issue for this item will provide funds for completing the acquisition of land for O'Hare International Airport on Chicago's northwest side, and to lengthen runways and extend the terminal building to reduce congestion at Midway Airport on the city's south side.

(At O'Hare, the remainder of the total $100 million airport program will be financed by the airlines through revenue bonds. These bonds will be paid from revenues only and will not be general obligation bonds.)

• **Street lighting**—Chicago's city-side program of relighting 2,300 mi of residential streets and 930 mi of arterial streets has passed the half way mark, and an additional $15 million worth of lighting is needed to complete the job.

To date, 65% of the city's 155 sq mi of residential area has been relighted and 450 mi of arterial streets have been equipped with new mercury-vapor, high-intensity safety lighting. Most of this work has been done through the use of motor fuel tax funds. However, many of the arterial streets are not eligible for motor tax funds, and the proposed bond issue will provide money for this purpose.

Most of the $10 million in the item for mass transportation improvement will be used to expedite installation of transit facilities in the center strips of the Northwest, South and Southwest Expressways. This construction includes tunnels and other items which, if not built at the time the expressways are constructed, would increase the cost and difficulties of furnishing them at a later date.

• **Slum clearance**—The proposed bond issue of $10 million for land clearance will provide funds needed by the Chicago Land Clearance Commission to extend the federally aided program of slum clearance and check the spread of blight in the Windy City. It will enable the commission to expand its present program by about 40 percent.

The commission has 18 projects now under way, of which seven are nearly completed. Of the other 11 projects in various stages of planning, 6 will become active within the next four months and 5 are expected to reach the stage of property purchase and relocation by the end of this year.

This program is predicated on the expectation that the federal government will continue to support re-development work by furnishing $2 for every $1 of local funds authorized for local renewal projects.

The $10 million in the program earmarked for community conservation, is for revitalizing and rebuilding rundown

for pumping domestic and industrial wastes...

This Shone ejector has been in operation for 68 trouble-free years—in the Auditorium Hotel (Roosevelt College), Chicago, Illinois.

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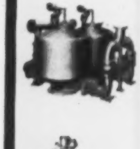

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TRANSIT FACILITIES from a $10 million part of proposed bond issue.

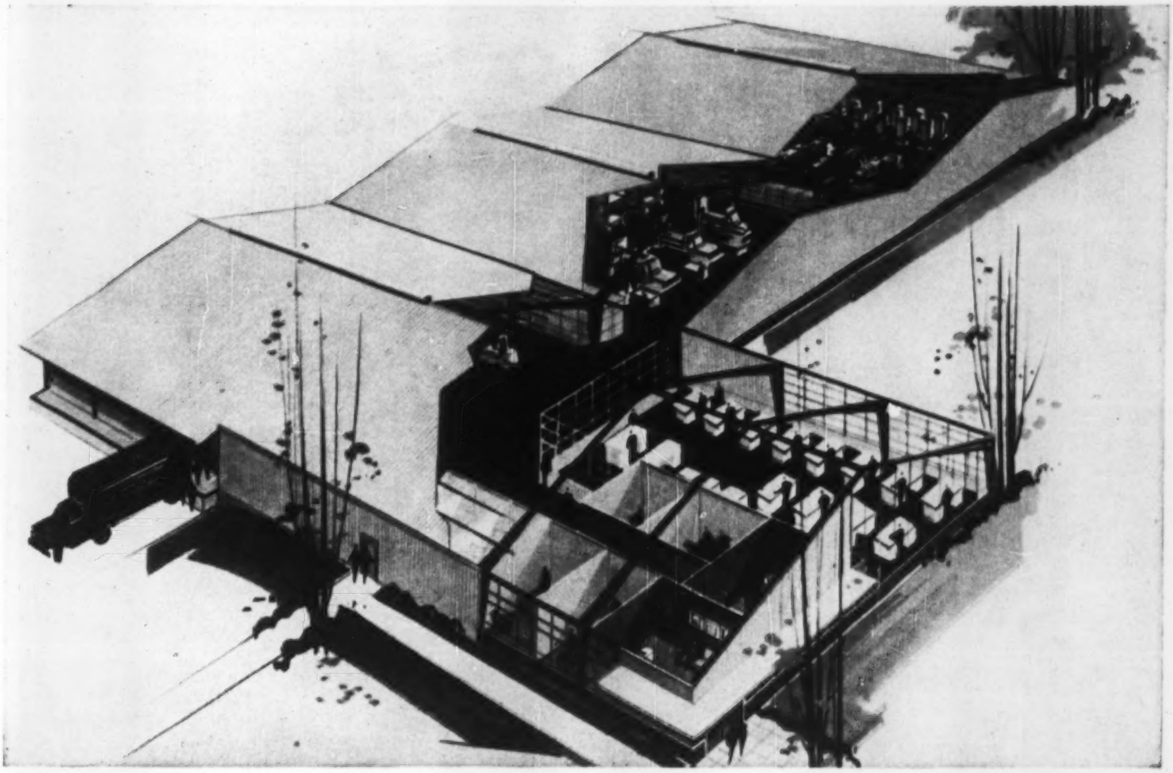
neighborhoods. Four major projects are currently under way, in the Hyde Park-Kenwood, near West Side, Lincoln Park and Englewood areas.

• **Garbage disposal**—Chicago needs the $9 million in the bond issue listed under garbage disposal chiefly for the construction of additional incinerators. With the city's only remaining disposal site, at 103 St. and Lake Calumet, approaching full capacity, it no longer is possible nor desirable to dispose of garbage in open land areas. The bond issue will provide funds for two additional incinerator plants which are urgently needed.

• **Sewers**—Chicago needs an additional $8 million for sewer improvements to supplement a $26 million fund previously authorized. It would permit extending the present 72 mi system of major trunk lines now serving 900,000 persons, to a total of 100 mi and serving 1,200,000 people.

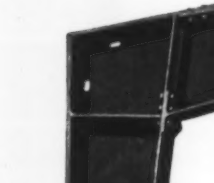
Another urgently needed item in the $113 million, three-year public works improvement program, according to Chicago's Mayor Richard J. Daley, is the repair and improvement of Navy Pier. The 40-year old structure must be rehabilitated and its facilities expanded to serve the increasing number of ships using the pier each year.

• **Municipal buildings**—The $9 million for this item will be used for erecting and reconstructing buildings for ten district police stations, and for the erection and reconstruction of an equal number of fire stations. An additional $1 million is needed for new fire-fighting equipment, and $1 million for a new administration and medical building at the city's house of correction.



Manufacturers get rugged, clear-span design, attractive *Stran-Satin* walls

with NEW STRAN-STEEL BUILDINGS



Sturdy Tapered Frame Design Puts Strength Where Needed

The open, clear-span design of Stran-Steel buildings makes them ideal for the optimum use of machinery, manpower and materials in manufacturing operations. In addition, new Stran-Steel buildings have a look of quality never before achieved in an all-steel structure.

Start with the smart *Stran-Satin* finish. *Stran-Satin* metal wall, exclusive with Stran-Steel, provides a strong, durable exterior with the weather resistance of zinc-coated steel. Peaks, gables and eaves are completely enclosed with smart fascia flashing.

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Up to $25,000 is available to finance these buildings through the Stran-Steel Purchase Plan. As little as 25% initial investment; up to 5 years to pay. Ask your Stran-Steel dealer for the complete story. He is listed in your classified telephone directory.

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37-SS-30A 27

How to sign a "Hold Harmless" contract with confidence

You—or another representative of your company—may sometime be called upon to sign a contract carrying a "hold harmless" clause.

Take care! "Hold harmless" clauses can be far from harmless.

Among other points, three important considerations are involved in such contracts:

(1) They often create new and sizable liabilities. And (2) these liabilities may not be covered by your regular Liability Insurance.

So somebody should make certain that any liability your company assumes by contract is covered by contractual liability insurance. Or if it isn't, whether it *can* be.

(3) When your firm enters into contracts with companies or individuals who say they'll hold *your* company harmless, it's time to look at the other side of the coin: Just how good is *their* "hold harmless" agreement? Is it backed by specific contractual liability insurance?

As you can see, the subject isn't one that can be dismissed lightly. It's too complex for those without special knowledge to cope with successfully. And that's why so many companies prefer to have their entire liability hazard, including contractual liability, insured by the Hartford Accident and Indemnity Company.

The Hartford organization brings experience, competence and flexibility to the handling of your insurance problems. Gets under way quickly. Follows through in doing everything that can be done to meet your requirements.

When any "problem insurance matter" comes up—like contractual liability—call in an agent of the Hartford Group. Or ask your insurance broker about the benefits of *Hartford* Service. It's the simplest, surest way to avoid trouble!

Year in and year out you'll do well with the

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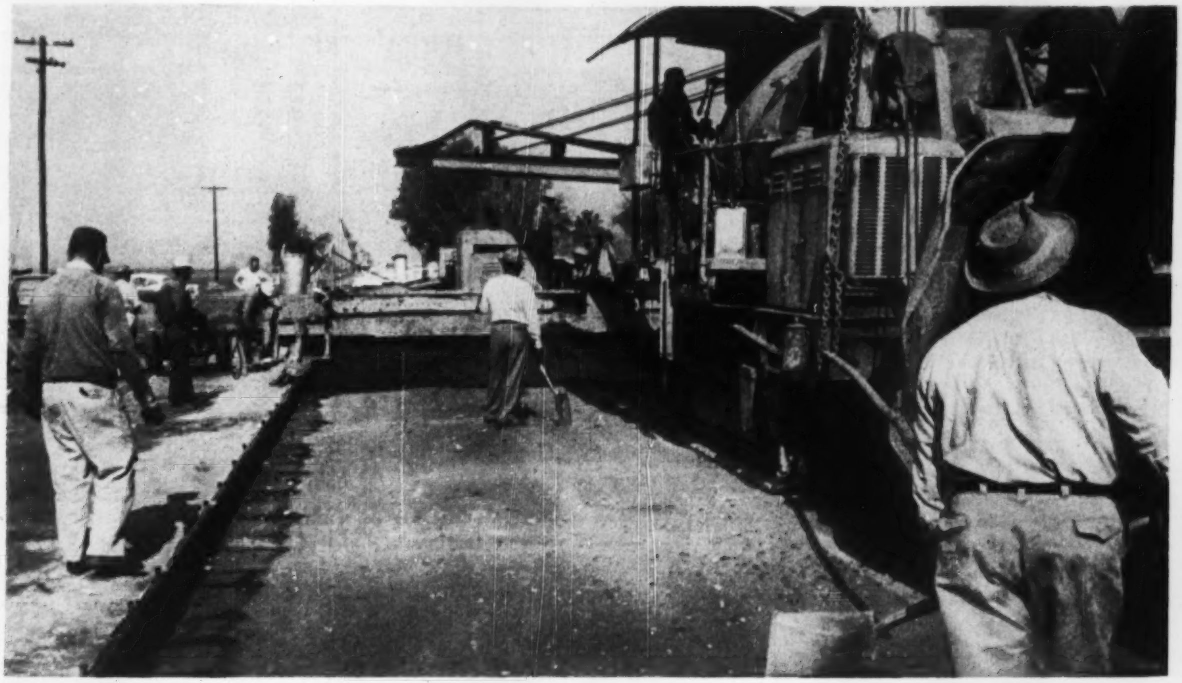

Paving Train lays two lanes of concrete on old road

Special Finisher Meets Tight Tolerances

Resurfacing of a stretch of the southbound lanes of the 4 lane divided highway (U. S. 99) joining Los Angeles with the Central Valley has been notable for the finishing procedure followed.

Instead of placing the 8 in. concrete slab in 12 ft single lane widths—the usual California highway practice in order to meet exacting smoothness specifications—the concrete was placed and finished to the full 24 ft, 2 lane width. And the specifications were met by a special contractor-developed, long-wheelbase finisher in which the float elements were arranged in a herringbone pattern.

The section of road resurfaced is south of Bakersfield on a gradual upgrade steep enough to force heavy truck traffic to travel in low gear at slow speeds. This produced a damaging effect to the existing 7 in. asphalt pavement built in 1938 with a mix of too low stability. Attempts at protection, first with an open-graded plant mix and then with a layer of asphaltic concrete, proved unsuccessful, causing the present resurfacing to be undertaken.

Under the resurfacing program, the existing pavement was used as subgrade without further preparation, wherever it appeared to be adequate. The new 8 in. concrete slab was added simply by pinning steel side forms to the edges of the old paving, and placing concrete directly on it. The finished work includes 10 ft wide asphaltic concrete shoulders.

• **Tolerances tight**—Griffith Co. of Los Angeles, the contractor, chose to lay the 24 ft wide concrete slab in one continuous operation. This is only the second time in recent California highway practice where full width (24 ft) paving has been used. Reasons are that a limited number of such paving spreads are available, and passing room is frequently needed during construction. But also important is the fact that specifications include special requirements to develop a smooth surface on the theory that smooth pavements are less susceptible to damage by impact from fast-moving, heavy vehicles. It usually has been considered that these specifications were more easily met on narrower widths.

California's tolerances of ⅛ in. in 10 ft is not in itself unusual. But the specifications require a delayed finish and use of special floats until all concrete subsidence ceases. In addition, the contractor is required to grind off inequalities in excess of ⅛ in. in 10 ft. in a longitudinal plane of considerable length.

These requirements virtually demand the use of a machine float that can level off inequalities.

Some engineers, however, have objected to the California finishing practice on the grounds that it builds up a layer of mortar on the pavement surface. This, they contend, leads to severe surface damage after one hard winter. California highway engineers, however, have cut numerous cores from their pavements to see if this is true and reportedly have found no inordinate segregation or surface mortar layer.

• **Equipment train**—The paving train included a spreader that tamped and kneaded the mix for initial finishing, and a 24 ft wide mechanical finisher that assured uniform distribution of the concrete through screed action.

This finisher, job-developed by the contractor, has a series of steel-clad timbers arranged in a herringbone pattern. It spans the 24 ft between steel side form and is 20 ft long. Self-propelled, the machine makes several passes after the concrete is nearly set to level off the inequalities with reference to the long wheel base, and to leave a smooth pavement.

THE
MASSAPEQUA
STORY

A Report on How Engineered Timber Serves the Needs of Modern School Construction

The School District of Massapequa, Long Island, New York, found a solution to overburdening school building taxes by using engineered timber construction for four schools recently built in their community.

Clear span Teco roof trusses connected with Wedge-Fit split ring connectors and glued laminated beams and arches were used for a 35% reduction in initial construction costs.

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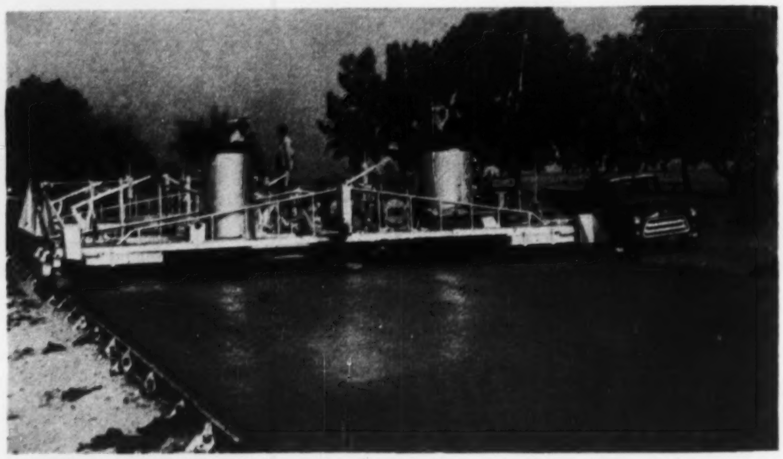
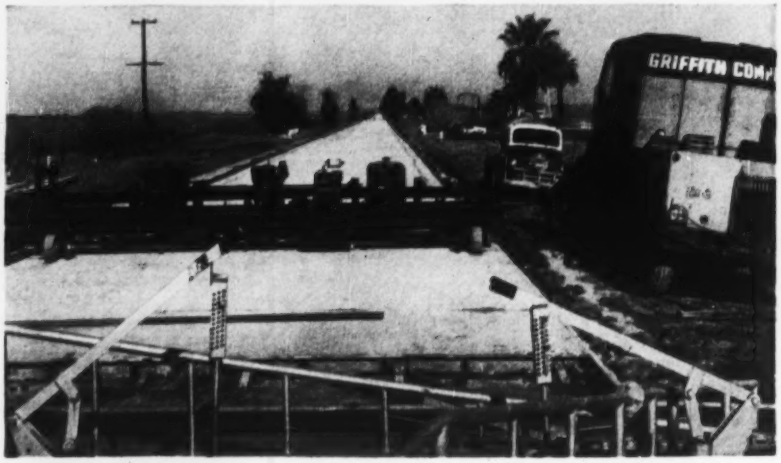
. . . Special finisher permits two lane paving



FLOAT FINISHER, two lanes wide, puts final touches on surface. Tight evenness requirements have made multi-lane paving unusual in California.



TRANSVERSE JOINTS are cut at 15 ft intervals by a two bladed, wheel mounted saw. Longitudinal joints in 24 ft wide pavement were cut later by a different machine.

The boards on the float are so arranged that they can be adjusted to make a plane section or a crowned section—on this job the crown of the original pavement was retained. A short board on the front of the float near the center can be adjusted to throw the windrow of accumulated mortar to either side as needed. A separate, independently mounted board on each 12 ft half of the rig is used as the strike-off board in making the final pass.

Tie bars at 30 in. centers were required by the state—as would be the case if the concrete were laid in two separate 12 ft wide strips. The contractor developed an attachment to the spreader, which consisted of two discs having a 90 in. circumference, with notches cut in the discs to give the 30 in. spacing. A workman placed the bars in the notches and the discs rotated as the spreader moved forward to place the bars 4 in. into the concrete.

Transverse joints were sawed every 15 ft and a longitudinal point was sawed down the pavement center. Transverse joints were cut by a two-bladed wheel-mounted, pavement saw. The longitudinal joint, cut after the side forms had been stripped, was made by a machine that rode the pavement edge and mounted a single blade.

The specifications permitted sawing of joints at any time. Since the paving was done in cold weather, the concrete set slowly, so that about 30 hours elapsed between placing and sawing. Due to the time interval, the joints did not ravel.

George T. McCoy is state highway engineer for the California Division of Highways. The Bakersfield job was under the direction of William L. Welch, district engineer for District VI. Norman Lambeth was resident engineer. Bruce McDonald was general superintendent for Griffith Co.

ACCO
for Better
Values

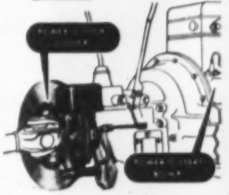
IT TAKES 4 TIMES THE POWER TO STOP THEM AS TO RUN THEM

Acco Tru-Stop Disc Brakes have that braking power —they stop and hold them safe and sure at lowest cost

• When an ACCO TRU-STOP DISC BRAKE says "Stop!," it *means* "Stop"—a quick, positive stop that prevents accidents in emergency situations.

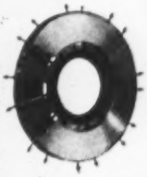
Actually, in terms of horsepower, it takes four times the power to *stop* mobile equipment as to *run* it. TRU-STOP Disc Brakes have proved their ample braking power and their complete dependability in making safe stops—even on steep grades! Long recognized as superior emergency brakes for trucks and buses, they have won increasing acceptance as the best brakes for tractor excavators, cranes, bucket-operating mechanisms, shovels—all types of heavy-duty motorized construction and earth-moving equipment.

Owners and operators of a wide variety of mobile equipment, conscious of danger to men, machines and property from accidents caused by inadequate braking power or brake failure, have come to realize the true economy of insisting on TRU-STOP Disc Brakes.



SURPLUS BRAKING POWER

Here is a brake that will outperform and outlast brakes of conventional types. TRU-STOP Disc Brakes not only have adequate power for all emergency braking—*they have surplus power*, more than enough to handle even the most difficult situation! That's because of their unique design and construction.



TRU-STOP BRAKES BREATHE!

The TRU-STOP Disc Brake cools itself faster than any other known type of brake because it is ventilated to throw off the intense heat generated by braking. It "breathes" because most of the disc is exposed to the air even during braking. Cool air circulates between the plates, carrying off heat.

UNIFORM PRESSURE ALWAYS

Another big advantage of the TRU-STOP Disc Brake is that the braking pressure is always controlled and uniform. The disc is "squeezed" between the flat surfaces of the shoes; pressure is in direct proportion to the pull exerted on the brake lever. *There is no dangerous self-energizing.* Braking is always effective . . . stops are smooth . . . linings have long life . . . down-time and maintenance are kept at a minimum.

By any standard, TRU-STOP Disc Brakes give you better, safer braking over a longer service life than any other type brakes you can buy. They save far more than they cost. And—they are typical of ACCO BETTER VALUES.

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ACCO

A better roof or floor slab results at lower cost when architects and contractors agree on Steeltex Floor Lath, the wire mesh reinforcing that carries its own water-proofed form right on its back. Steeltex can be unrolled, stretched as in the photo above, and clipped with simple tools by workmen without previous training.

Steeltex saved 6½ days on 14,000 sq. ft. roof deck

Pressure on school boards, architects and contractors to finance, design and build new schools is greater than ever.

Although a record 62,000 new classrooms were built in 1956, educators say the nation needs at least 93,000 more each year for the next 10 years.

School boards demand the best value for each construction dollar. They also want their new schools placed in service as fast as possible. A Michigan contractor, to cite a case in point, responded to this need by saving 6½ days on a school job by his wise choice of materials.

The contractor is The Charlson Company of Wyandotte, Mich., who saved a week's working time on the Ecorse Elementary School in Michigan by using Pittsburgh Steel Products' Steeltex Floor Lath. With Steeltex the roof was prepared for concrete pouring in 28 working hours, compared to an estimated two weeks if other forms had been used.

The job called for laying about 14,000 square feet of Steeltex over joists in preparation for pouring a 2½-inch concrete slab. Steeltex' time savings were made more impressive by the fact that the Charlson crew had never before worked with Steeltex. Also, the job was complicated by numerous columns and other irregular shaped objects on the roof deck.

William Johnson, construction superintendent on the job, said use of Pittsburgh Steeltex—the wire mesh reinforcing that carries its water-proofed form right on its back—per-

Steeltex is economical . . . . easy to form . . . . fits irregular shapes.

These photographs show some of Steeltex' money-saving advantages. Above, rods welded to joists eliminate diagonal bridging. Steeltex and concrete give joists lateral stability.

Since Steeltex Floor Lath is easy to bend and cut, one man covered this depressed area in a few minutes. John Casey, architectural superintendent, points to the neat finished job.

Steeltex requires no engineering to make it fit snugly around irregular shapes. On this job, columns were left protruding through the roof to support a future second story.

mitted his men to start laying Steeltex on a Wednesday morning and complete the job Monday noon, just 3½ days later.

Steeltex, sold by the Pittsburgh Steel Products Division of Pittsburgh Steel Company, was specified by the Detroit architectural firm of Giffels & Vallet, Inc., L. Rosetti, Associated Engineers and Architects.

The specification pleased President K. H. Charlson of The Charlson Company who said:

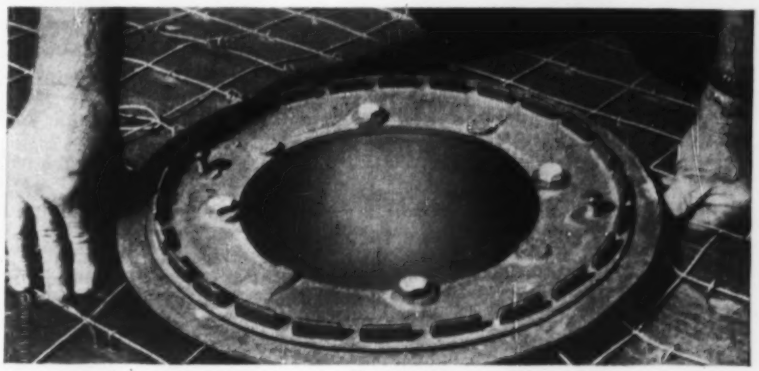
"Steeltex definitely was the best choice. It is a good product that is easier to cut and shape than other material. The paper backing reduces dripping and eliminates clean-up problems on the floor below.

"Steeltex is economical to buy, saves a lot of costly, time-consuming work and produces a high quality concrete slab with good reinforcing."

You, too, can reduce costs and pour concrete decks quicker while improving the quality of floors and roofs—when you use Steeltex.

The special advantages of Steeltex will work as well for you as for this Michigan architect and the contractor.

A trained Pittsburgh Steel Products engineer, with lots of construction know-how, is available close at hand. Call him at any of the district offices listed here. Do it today.



You eliminate messy drip-through on the floor below when you use Steeltex. Mesh and water-proofed paper backing can be fitted right to the edges of objects like this sump on the roof deck.

▶ **See Sweets Catalog Section 2-B**

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Just in time for the Jamestown Festival, Williamsburg, Va. completes satellite facilities that will free its restored area of 20th Century distractions

Authentic in architecture . . .

and atmosphere of Colonial days . . .

ENR Staff Photos

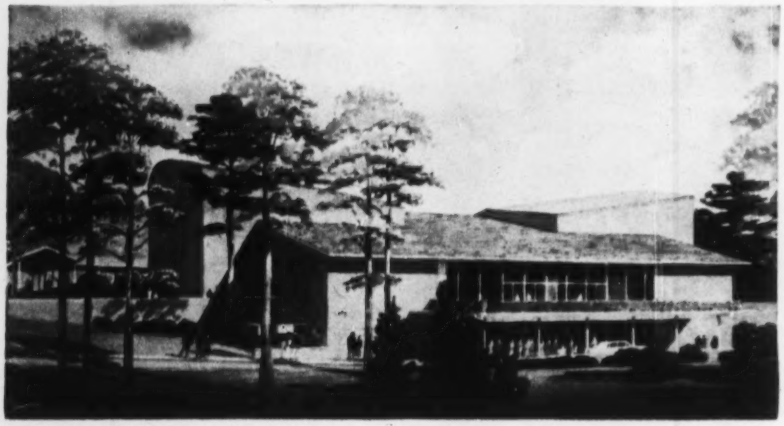
Williamsburg Guards Its Character

Williamsburg, Va., where American freedom was born, still has a job of maintaining its own freedom—this time from 20th century encroachment. The solution being tried—separation of the necessary modern service facilities from the central colonial village – has occasioned recently the investment of $9 million in an information center and other facilities for visitors on one side of the restored area and of $2 million in a shopping center farther out on another side.

Both of these installations have involved a design and construction task of considerable size and interest. Work on the information center particularly has been on a rush schedule in order to have it completed in time for the Jamestown Festival beginning this spring. This will be the celebration of the 350th anniversary of the founding of the first permanent English settlement in America—and Williamsburg's neighbor and predecessor as the capital of the Crown Colony of Virginia. Since Williamsburg has the only overnight accommodations in the area, and because it is the more extensive of the two historic attractions, it will be the scene of intense activity during the rest of 1957.

• Success creates problem—The crowds, which the Jamestown Festival will attract, merely typify Williamsburg's continual problem. For, restored to its 18th century character over the last 30 years through the generosity of John D. Rockefeller, Jr., this unique town is in a paradoxical situation. It wants visitors—indeed, it was conceived to promote an appreciation on the part of every American of the beginnings of our country and our form of government—but the greater its success as an attraction, the more difficult becomes the task of maintaining the atmosphere of its early days.

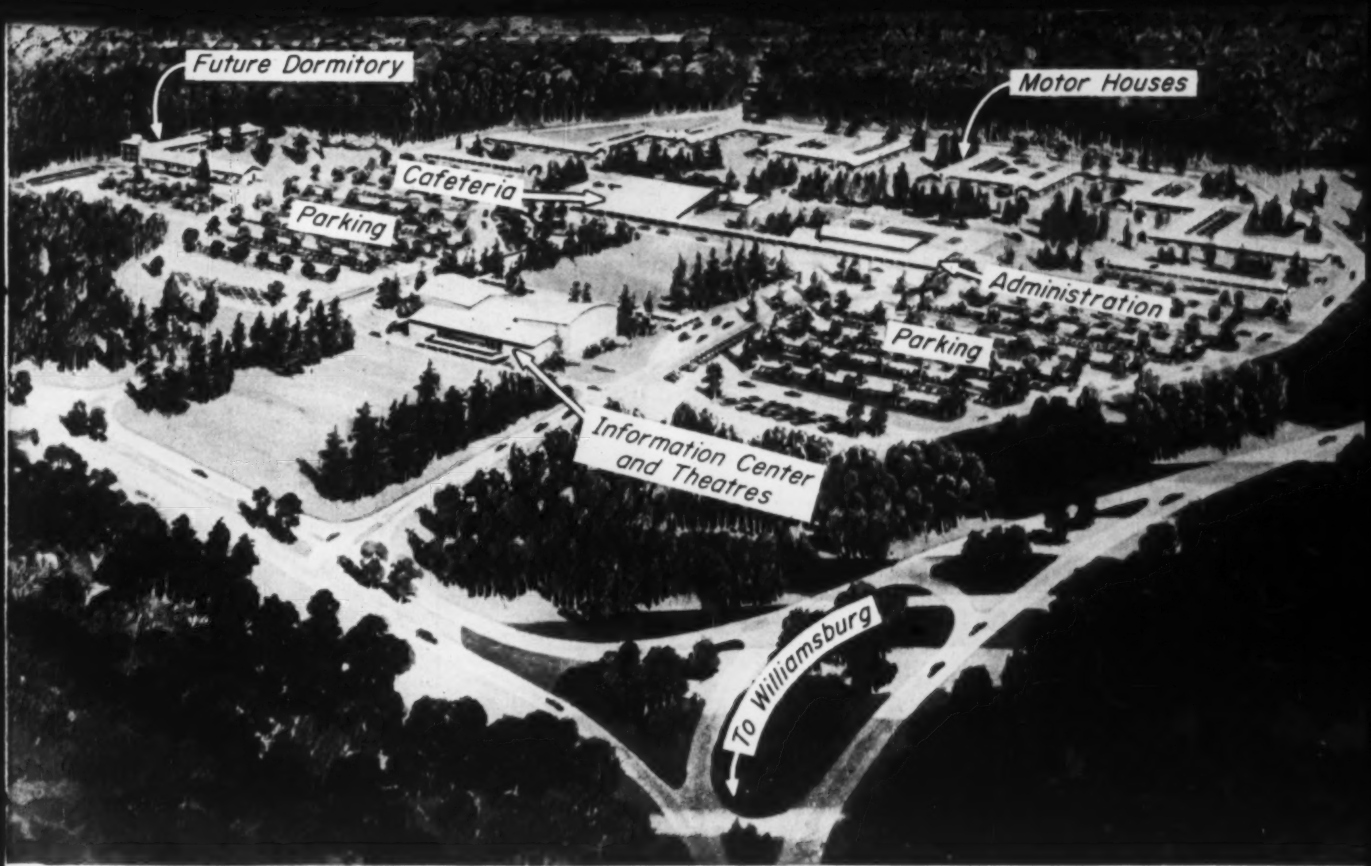
And Williamsburg has been unusually successful as an attraction. Today, after an expenditure of more than $50 million, it includes 130 acres of restored area, 90 acres of greens and gardens and over 450 restored or reconstructed buildings. Since the restoration began some 8 million persons have visited it. The annual number is now 750,000, which it is estimated will be 1 million by 1960.



INFORMATION CENTER BUILDING includes two theaters, shown projecting from either end. On this side the bus loading dock is at ground level and the exhibition hall above.

WILLIAMSBURG M

ADMINISTRATION BUILDING for the motor houses, which can be seen through



NEW RECEPTION CENTER will introduce visitors to the town's history and significance and provide for their rest and recreation.

The town's problem arises because these visitors require places to eat, sleep and to park their cars. Moreover, it is necessary to provide auditoriums and other information points where the visitors can be briefed on the town and its early history. There are also the permanent residents who must have stores in which to shop, banks, churches and schools.

Some residents can be housed in restored buildings without violating their original character; other facilities can be provided in new structures which are in keeping with the colonial architecture of the area and which can be fitted in on the fringes of the restored area.

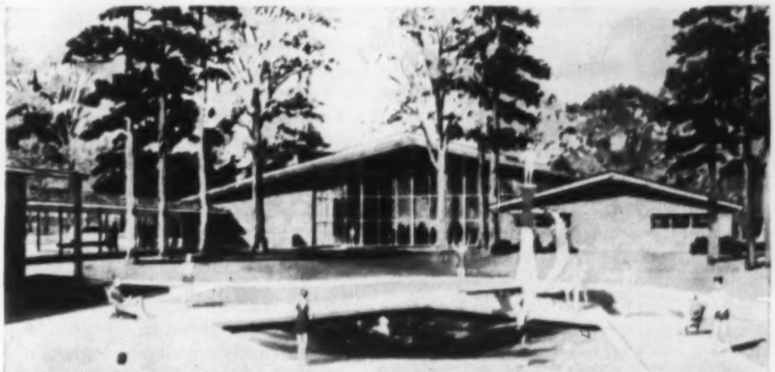
Both of these devices have been used, but now the limit has been reached. Not only would more 20th century facilities lessen the atmosphere of the restored area, but space for them is no longer available.

• Study point solution—The problem was foreseen as early as 1948, when an unusually comprehensive study of the town's future was undertaken. Two of the conclusions of that study were: (1) A new, separated shopping center would have to be provided; and (2) the reception of visitors and their briefing should be transferred from the restored area itself to an outside site, where cars could be parked and living quarters provided, and which could be developed as an attractive and instructive entrance to the colonial village.

The first of these satellite areas—the shopping center—presented no special problems over those encountered for

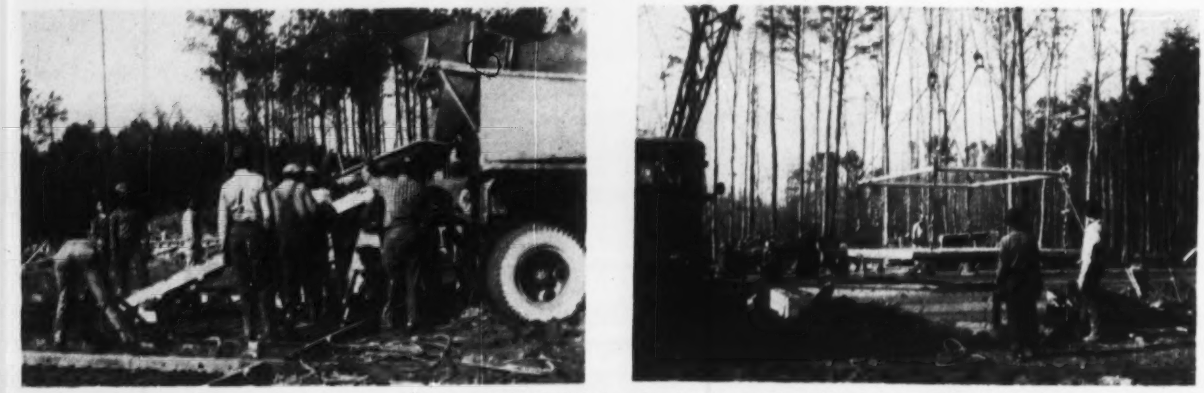
OR HOUSE
Motor House
Cafeteria

the covered driveway. Right, cafeteria as viewed from the administration building.



THE SWIMMING POOL on the lawn between these two buildings furnishes a central element for this service building group.

. . . Williamsburg reception center bridges two centuries



FLOOR SLABS for the motor houses were prefabricated in 12 x 14 ft units that were set (right) onto the foundations by a truck crane.

like facilities anywhere. It was required to be pleasing in appearance and in good taste, but it was far enough removed from the central town not to affect its atmosphere.

The second area, the reception center, however, was quite different. It had to be within reasonable distance of the center of the town, and, as a transition point from 20th to 18th century conditions, its architecture and its appointments had to be designed in such a way as to reflect this situation subtly and unobtrusively.

Fortunately, a suitable site was available. Hidden from the restored area by topography and trees, it encompasses an area of 40 acres that is situated between the two main highway entrances to Williamsburg—the Colonial Parkway from Yorktown and US 60 and 168 from Richmond in one direction and Norfolk in the other.

Within this area the information center has been developed on spacious lines. In addition to parking areas for more than 1,000 cars and buses, there is an information building, a hotel administration building, a cafeteria and a group of motor houses providing 216 rooms and swimming facilities for visitors.

Also included in the ultimate plan for the satellite facilities, but not yet built, are two dormitory buildings to accommodate 200 school children, a type of visitor which numbered 50 000 last year.

• **A unique building**—The main building of the group is the information center, a structure of 1.4 million cu ft incorporating, in a novel layout, a large lobby, lounges, an exhibition hall, extensive toilet facilities, two 250 seat theaters and a station for the free transit buses that take visitors around the restored area of the town.

In plan, what might be called the core of the building is H-shaped; the theaters are inserted between the legs of the H. One leg of the H accommodates the entrance including toilet rooms on either side and two lounge rooms beyond. The cross member of the H is a large theater lobby and information area, while the other leg of the H is devoted to an exhibition hall and historical museum.

All of the above constitutes the ground floor of the building, the bus handling facilities being below, with access to them by an escalator from the lobby area.

Actually, since the building is on a hillside, the bus facilities are also at ground level—on the exhibition hall side. They include a foyer, which opens onto the bus loading dock, and behind which are other extensive rest room facilities and a small assembly hall. The remainder of the basement is occupied by offices for the administrative staff, mechanical rooms and exhibit storage areas.

The theaters, which lend the dominant architectural tone to the building, are placed, as noted, on either side of the central lobby. There are two of them so that two identical 37 minute films can be shown simultaneously, but with their starting times staggered so that no visitor has to wait more than 20 minutes to enter a theater. Having two theaters also makes possible a more flexible evening program of films and lectures.

• **Theaters for comfort**—About 75 ft wide and 95 ft long, each of the theaters has a curved outside end wall, a functional architectural detail since the wall accommodates the 48 ft wide curved screen on which the films will be shown. This end of the theater is also made wider than the entrance end so that the sidewalls will angle outward from the line of sight of those in the seats. Also, these sidewalls are made severely plain so as to avoid any distraction from this source.

And further as an aid to the viewers, the rows of seats are arranged in steep (1 ft) steps, a low wall is placed in front of each row in order to furnish a feeling of isolation, and the rows are made continuous across the theater to aisles at either side.

The information center building is framed in structural steel and, because of the large rooms, extensive use is made of roof trusses. Two lines of these trusses run completely through the building from the entrance lounges (32 ft span), across the main lobby (58 ft span), and over the exhibition hall (40 ft span).

Trusses also span the 75 ft width of the two theaters. Steel beams span in the opposite direction between trusses, the largest and longest (16 in. 36 lb x 25 ft) being over the main lobby where they are employed to carry a projection room that serves both the theaters.

Basement walls and all floors are reinforced concrete, while the exterior walls of the building are of brick, relieved by large glass areas on the exhibition hall side.

The information center building will serve all visitors, but two other groups of buildings are focused on the needs of those who may wish to rest, eat or spend the night.

One group is composed of the cafeteria and administration buildings, which are in line with each other, connected by a continuous covered walk and facing the information center building across a grassed lawn. A swimming pool is located to the rear of the administration building.

The second group of buildings comprises the motor houses, made up of 12 buildings—straight, L-shaped and U-shaped—arranged in serpentine fashion across a plot 1,350 ft long and 350 ft deep.

• **For eating and heating**—The cafeteria is T-shaped in plan, with the kitchens and service facilities in the 200 x 50 ft head of the T, and the dining room, lounges and gift shop in the 96 ft long and 120 ft wide stem. Framed in struc-

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. . . Williamsburg visitor is well housed

tural steel, it has a gabled roof 80 ft long on each side from ridge to eaves, and incorporates 57 ft span trusses over the dining area. The end walls are largely glass in wood frames, extending from the ground to the ridge line. Enclosure elsewhere is brick. The roof covering is slate.

The cafeteria, with concrete rib floors, is built over a full basement, the feature of which is a 58 x 107 ft room in which the central heating and air conditioning plant for the entire project is located. Pipe tunnels, 5 ft in dia, run from this room to all of the other buildings.

The principal feature of the heating plant room is its 18 in. thick concrete slab floor, heavily reinforced to provide support for the equipment and resistance against uplift pressures from the unusual soil on which it rests.

Basement walls are also of reinforced concrete rigidly joined to the floor slab. Special care had to be used in building one of these walls since it was adjacent to a large water supply line, which crossed the site and had to be kept in service.

To hold the clay bank from sloughing away from the pipe, the adjacent basement excavation was carried down in alternate sections. Inclined timber braces were then placed against the vertical clay face in the opened sections, bearing at the other end against a temporary toe wall installed inside of where the basement wall would be built. The remaining excavation was then finished. As soon as the basement wall and counterforts were completed in one section, the braces were transferred to bear against it until the final backfill could be placed.

The administration building, similar in construction to the cafeteria, is considerably smaller, 42 x 162 ft in plan, but contains two stories and a basement. The second floor is entirely devoted to offices, while the first floor also includes a large lounge, social room, TV room, etc., for the accommodation of the guests of the motor houses, and a lobby, business office and registration desk for their use.

• Attractive, efficient housing—Unusually careful planning was accorded the motor houses so that they would reflect, both in appearance and living qualities, the high class character of the development. Thus they are oriented toward the grassed plaza and swimming pool of the cafeteria-administration building layout, with large glass windows on this side, but no doors. Entrances are all at the rear where there is a covered walkway connecting all rooms in each unit for the convenience of visitors and adjacent to parking areas. Each building, containing from 15 to 20 living units, is separated from its neighbor buildings by an aisle so that occupants can get from the back to the front on the outside.

In contrast to the other buildings in the development, the motor houses are brick veneer on wood frame, in a simple design using prefabricated interior wall framing, precast floor panels and gabled roof trusses. The buildings are about 24 ft wide, but the roofs also extend over the rear walkways, so the trusses have a 27.5 ft span between outside supports, and in addition have a 3 ft 10 in. overhang at the eaves at either side. Prefabrication of wall panels and trusses was carried out in a central carpenter shop from where the units were moved to the building sites and set in place with truck cranes.

Prefabrication was also used for the 5 in. concrete floor slabs. These were cast in each courtyard, in units of 12 x 14 ft, one on top of another, using 5 in channels as edge forms. With the forms in place a welded reinforcing mat was installed, and the concrete placed from a mixer truck. The slab was then covered with a kraft paper for a separator, the channel forms raised, and the process repeated.

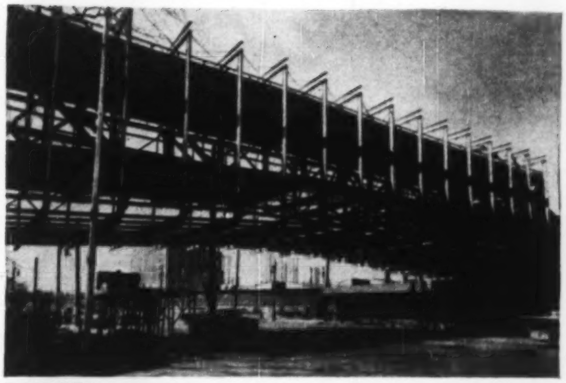
The foundations, which received these precast slabs, consisted of outside concrete walls around a walkway pipe space (there are no basements), and a row of concrete columns on the building centerline, which had been cast in circular, waxed cardboard forms. The slabs were installed on these supports by a truck crane using a job-made lifting frame that picked up the slabs at the four corners.

• Job planning and administration—An unusually large group of architects, engineers and specialist consultants collaborated in the planning and design as shown in the accompanying list. Colonial Williamsburg's construction and maintenance department, under the direction of Charles E. Hackett, carried out all construction work and coordinated and directed the efforts of many sub-contractors. Landscape construction was under the supervision of Alden Eaton, Colonial Williamsburg's director of landscape construction and maintenance.

The principal subcontractors were Wachter & Wolff, Richmond, for heating, air conditioning and plumbing, and Chewning & Wilmer, Richmond, electrical contractors.

In the development and execution of this reception center project, as in the whole of the Williamsburg restoration since the beginning, the technical direction has come from A. Edwin Kendrew, the resident architect. Thirty years ago,

Look where **HIGH STRENGTH BOLTS** give **better connections**



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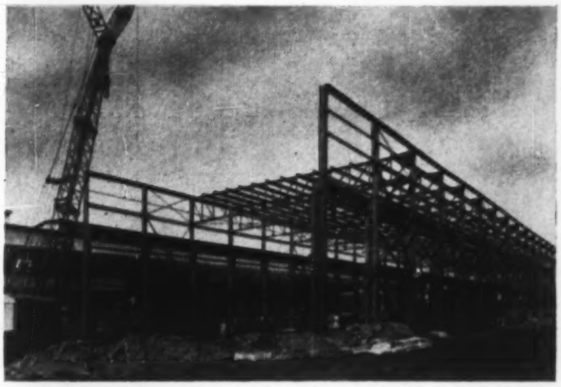
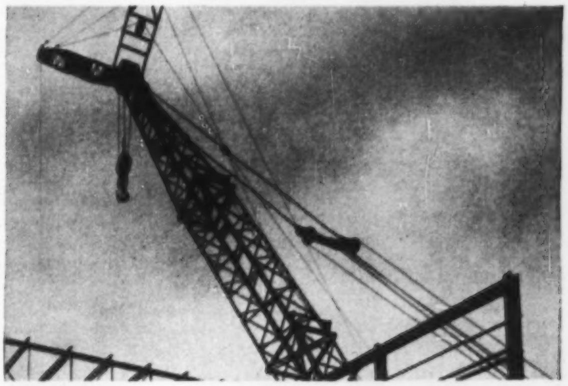


INDUSTRIAL PLANTS Erectors of mills, power houses, heavy industrial works and factories are taking advantage of RB&W High Tensile Bolts to give joints more strength in shear and in tension against impacts and stress changes due to operation of cranes and heavy machinery.



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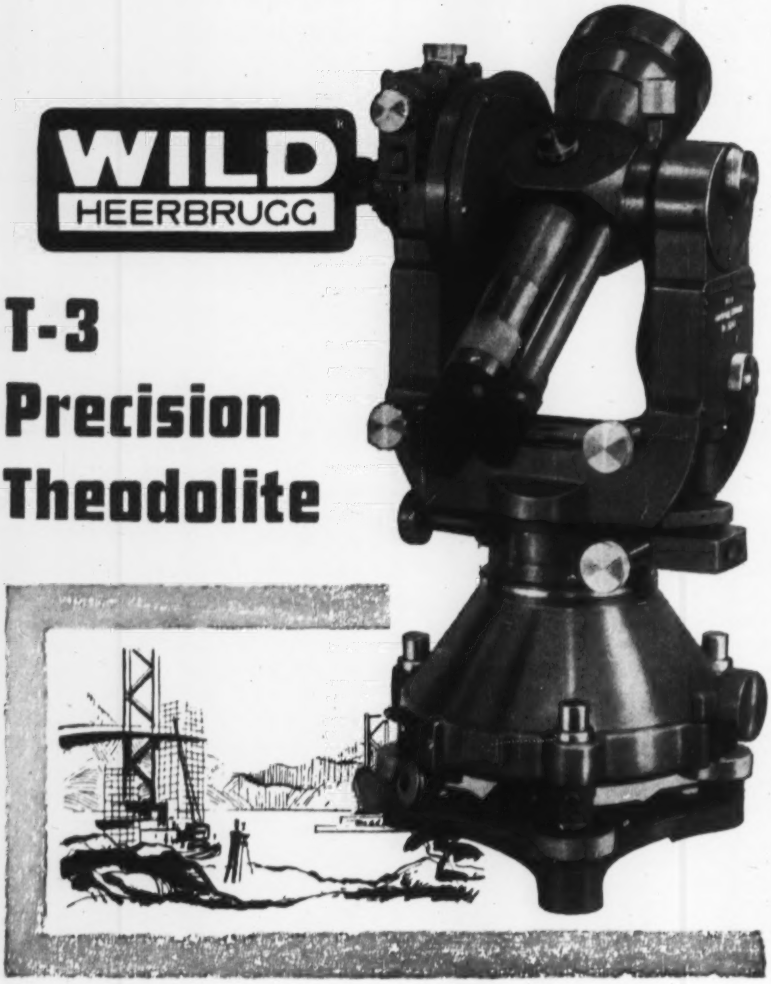

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. . . Williamsburg

when a young man in the employ of the Boston architectural firm of Perry, Shaw & Hepburn, he was sent to Williamsburg as almost his first assignment to report on a request from John D. Rockefeller, Jr., that the firm undertake a study of the possibilities of restoration. The report was favorable, the firm was engaged and has remained through the years as the prime consulting architects. Kendrew, first with the firm and since 1934 with Colonial Williamsburg, Inc., has thus devoted much of his professional career to this one architectural enterprise.

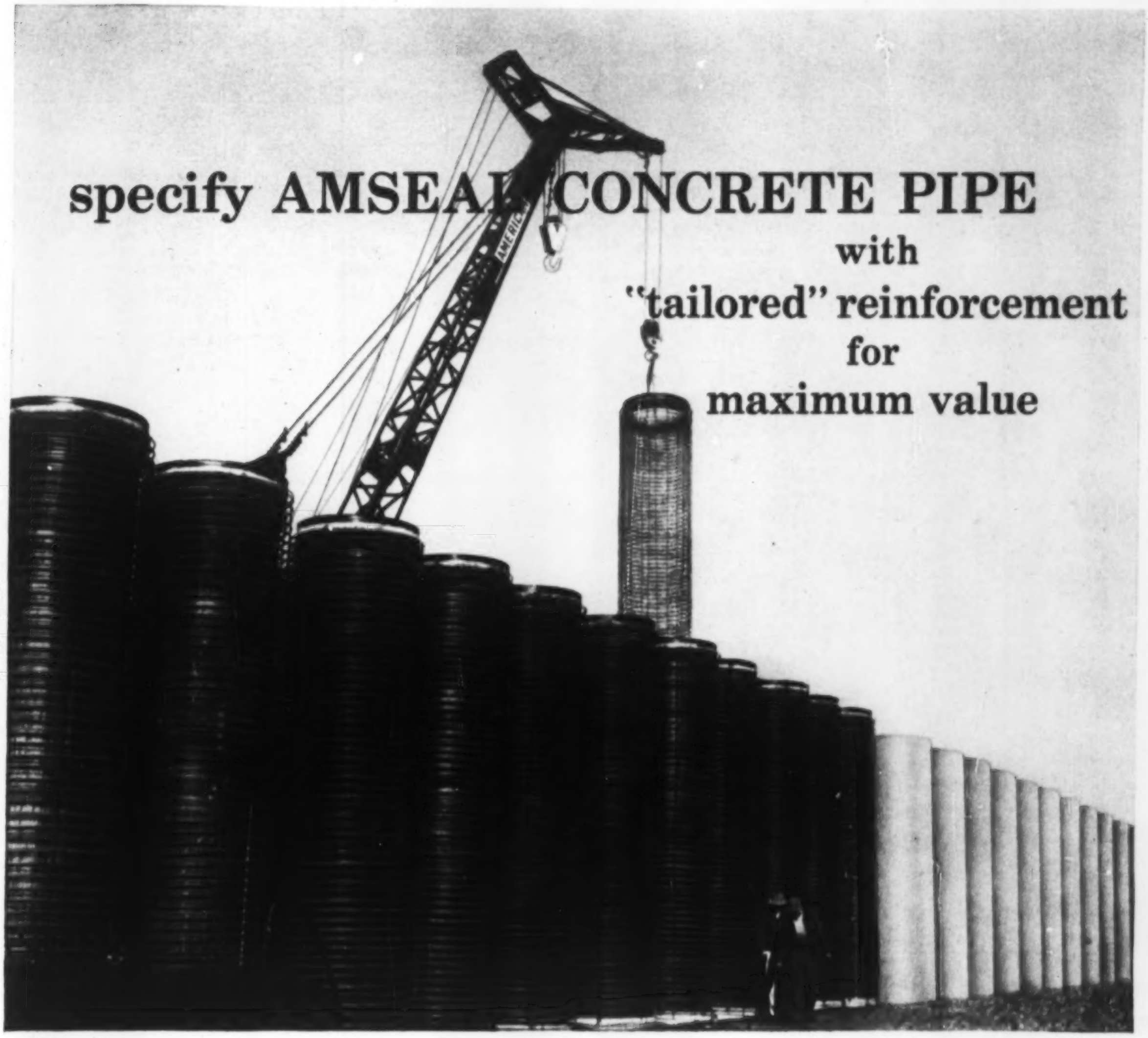
Architects, Engineers and Consultants for Williamsburg Information Center Area

Colonial Williamsburg staff:

A. Edwin Kendrew
Resident Architect and Vice President
Mario E. Campioli
Director of Architecture
Ernest M. Frank
Assistant Director of Architecture
Thomas W. Drewry
Resident Mechanical Engineer
Alden Hopkins
Resident Landscape Architect

Consultants:

Harrison and Abramovitz, New York
Consulting Architects
Cleverdon, Varney & Pike, Boston
Structural Engineering Consultants
Wiley & Wilson, Richmond, Va.
Design Engineers for Mechanical, Electrical, including outside utilities and roadwork
Wilbur S. Smith Associates, New Haven
Traffic and Parking Consultants
Bolt, Beranek and Newman, Cambridge, Mass.
Acoustical Consultants
Benjamin Schlanger, New York
Theater Consultant
Wayne A. Becker, Cincinnati, Ohio
Swimming Pool Consultant
Tom Lee, Ltd., New York
Interior Consultant—Motor Houses
Becker and Becker Associates, New York
Merchandising Consultants
Howard L. Post, New York
Food Service Consultant
George Nelson Associates, New York
Exhibitions Consultant
Gerald Ewing, Wilton, Conn.
Lighting Consultant



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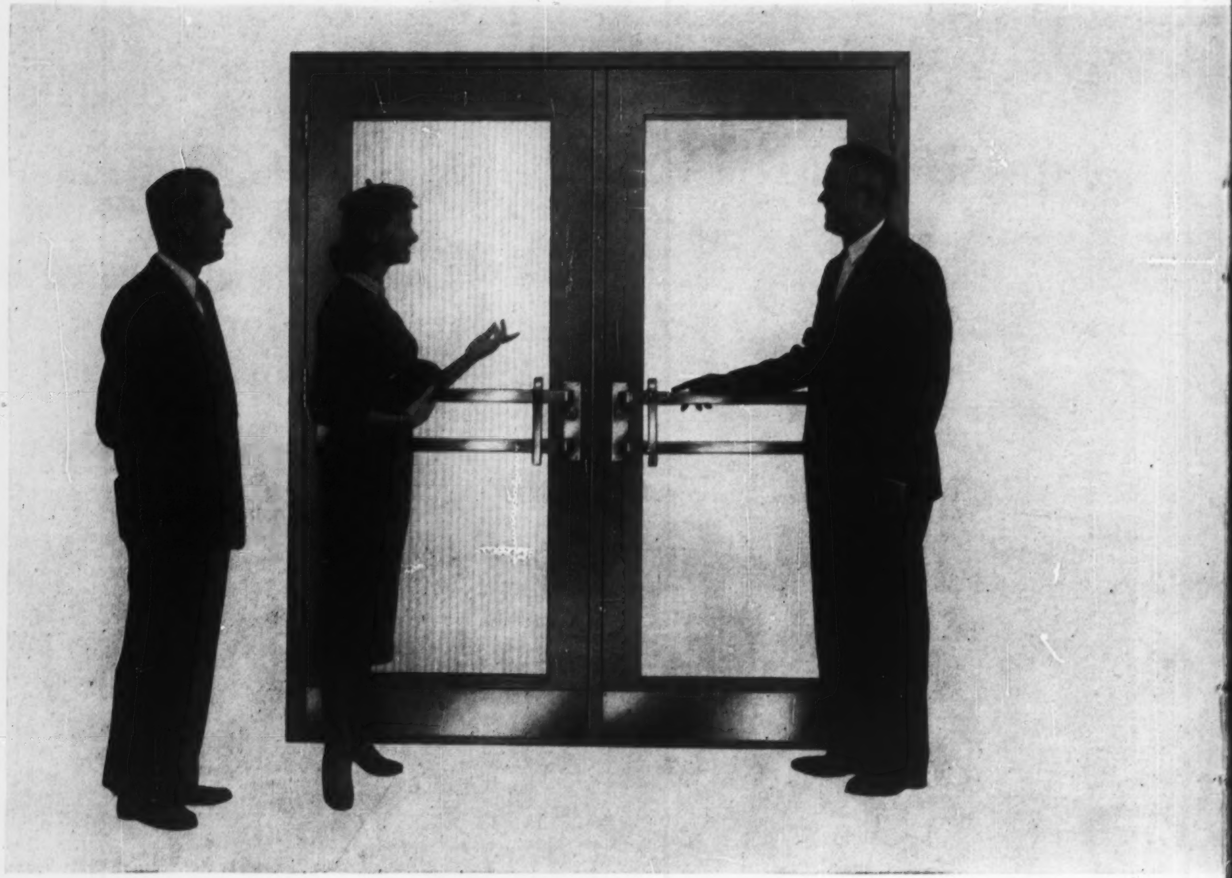

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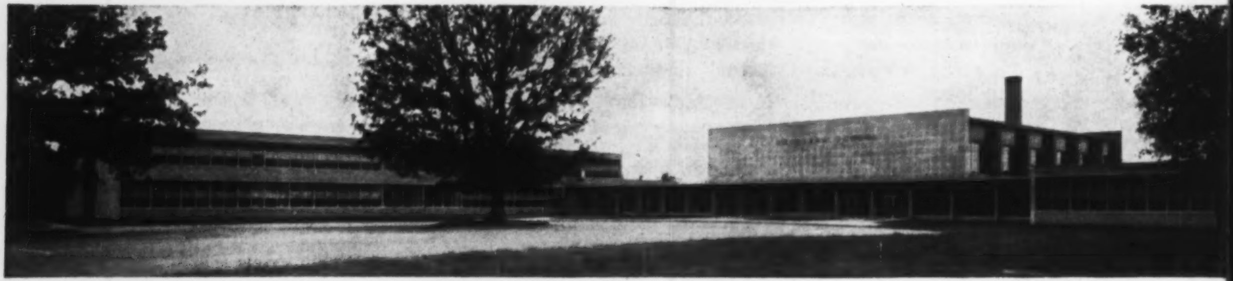
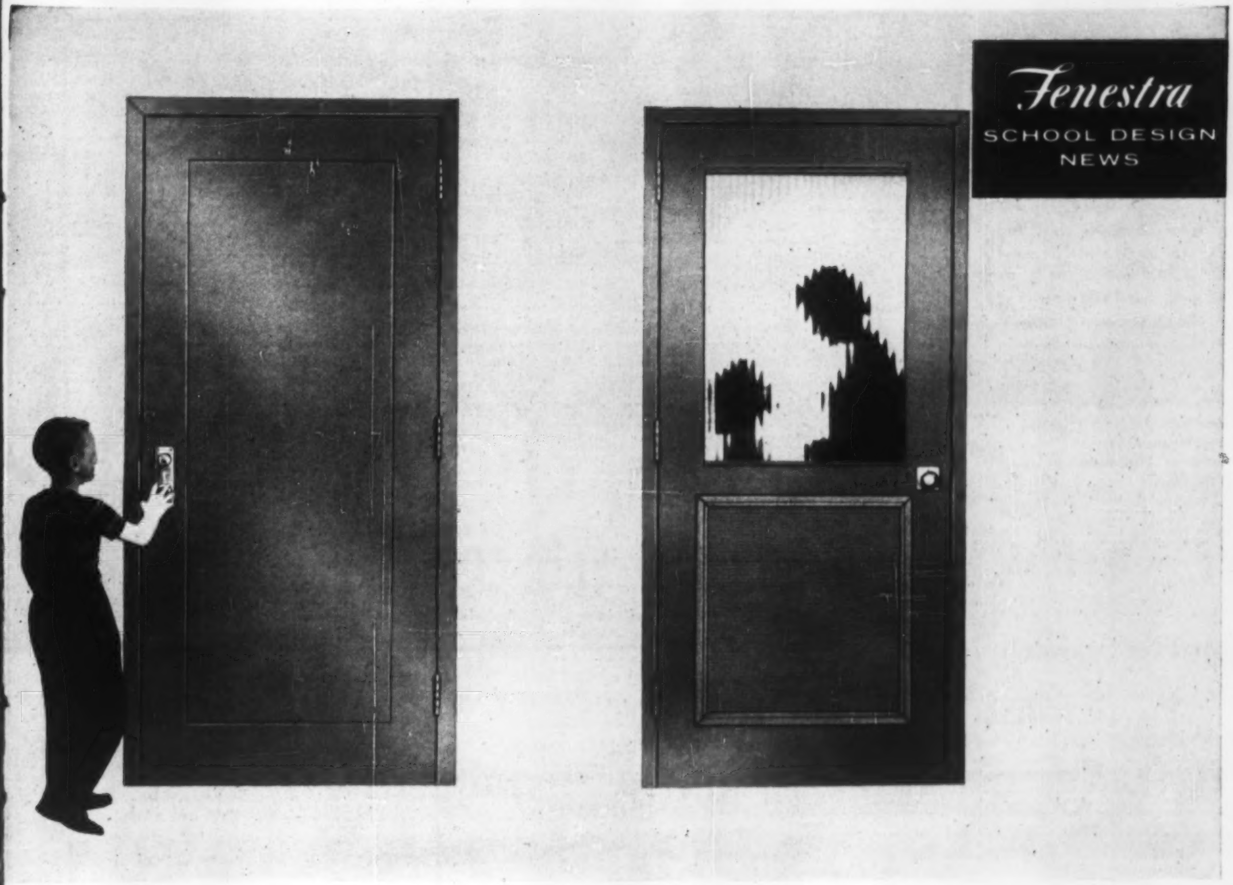


REIDLAND SCHOOL, Paducah (Reidland), Ky., cost less to build because 134 Fenestra 1¾" Hollow Metal Flush Doors were used. *Architect:* G. Tandy & Lee Potter Smith, Paducah, Ky. *Contractor:* Erhart-Knopf Construction Co., Inc., Louisville, Ky.



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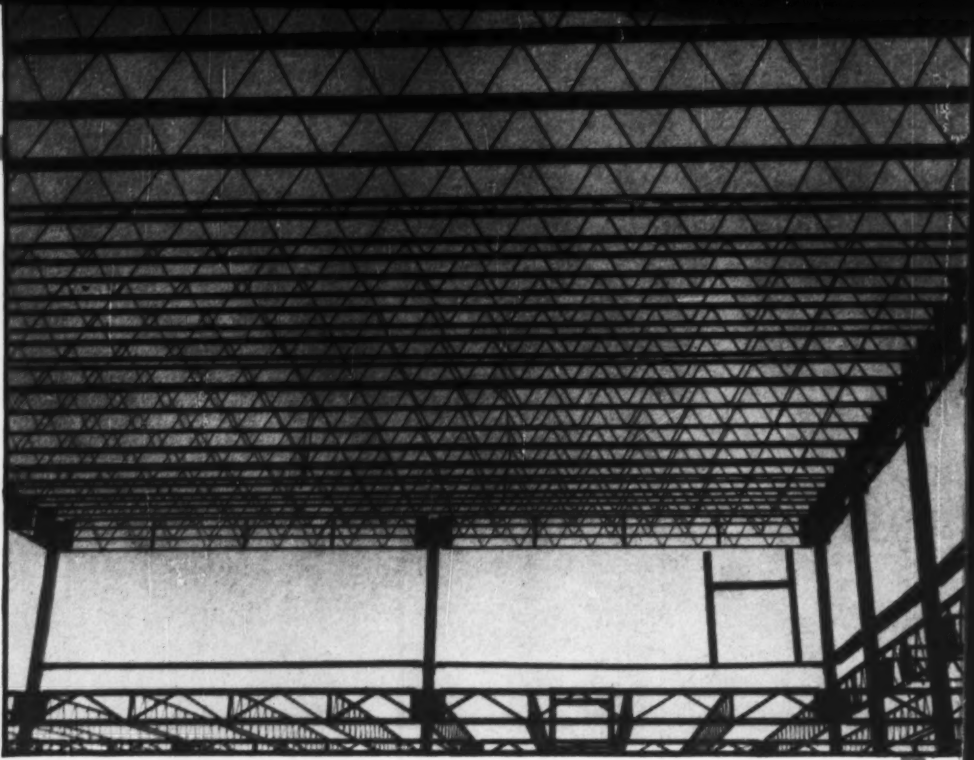
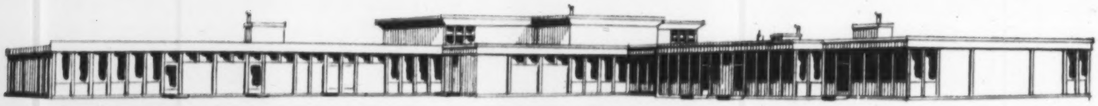


The Mother Seton School, Emmitsburg, Md., erected by American Bridge, included 134,400 pounds of structural steel and joists; 45,100 pounds of roof deck; 2,500 pounds of shop weld rods; and 9,600 pounds of well and curb liners. Porcelain-enamel steel wall panels were supplied by U. S. Steel Homes.

Architect: Earl M. Harvey
Contractor: Structo Schools Corporation—Boston Industrial Engineering Co. —New York



Strong, lightweight AmBridge Steel Joists support roof deck of new "Structo"-built Mother Seton School

THE MOTHER SETON SCHOOL of the Daughters of Charity of St. Vincent De Paul in Emmitsburg, Maryland, one of the first "Structo Schools" ever built, combines the use of factory-fabricated porcelainized steel wall panels and AmBridge Steel Joists.

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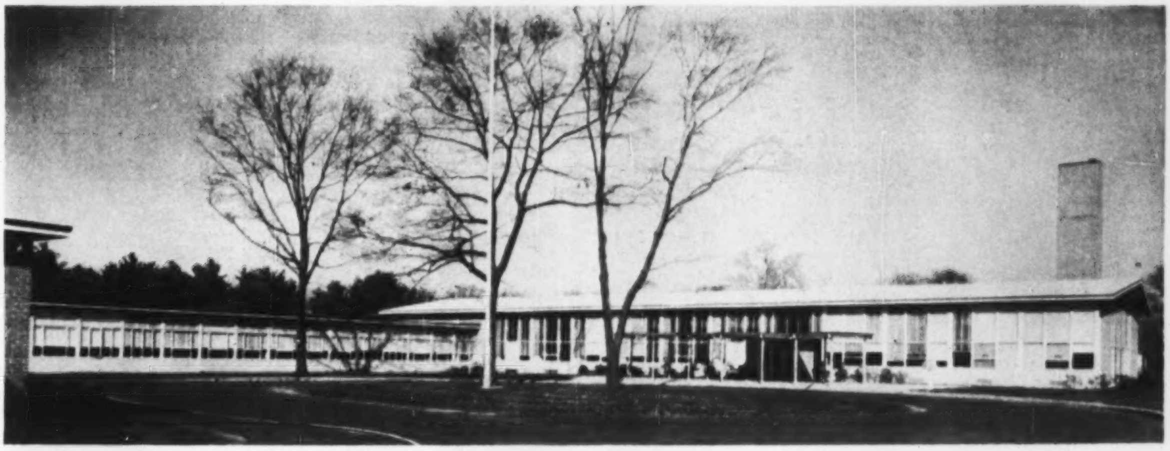

Twin schools — one built in 1954 (above), the other in 1956. Cost of second school is up 26%

Where the School Dollar Goes

Twin schools in North Haven, Conn., almost but not quite identical, one built in 1954 and the other in 1956, show a 26% price rise in two years. The contractor, Ames Construction Co. of Hartford, is the same for both and this is the increase in his low bid for the new Fitch Street Elementary School. The 1956 high bid was up 40% over the high bid received in 1954.

Materials and labor costs have gone up only 10% to 15% in these two years, as measured by the ENR Building Cost Index. The taster rise in contractor's bid prices in the past year follows a 2-year period when contractors' prices lagged behind the rise in costs. Now they are closing up this 1954-56 cost-price gap fast.

Rare in the building business, these parallel school costs are almost as good as a controlled laboratory test for diagnosing the causes and effects back of this price rise.

The similarities, which outnumber the differences, are itemized in the analysis that follows.

The new Fitch Street School has some extras, including a 30x8 ft roofed and glassed-in passageway from the main school to the kindergarten and some differences. These too are pointed out, and their cost is reported where possible.

The two schools are:

IDENTICAL in these respects:

Number of pupils	640
Classrooms: number	18
size, ea, sq ft	812
pupils, ea room	30

Facilities: Kindergarten, 2 room separate building (see also differences), Auditorium-Playroom (50x75 ft), Cafeteria (50x50 ft), General Office, Principal's Office, Teachers' Suite, Library, Remedial Reading Room, Music Practice Room, Field Equipment Building—separate, Custodial Facilities, Two Health Rooms, Kitchen and Walk-in Refrigerator.

Architects, Engineers, Contractors

Architects: Carl J. Malmfeldt and Associates, Hartford, Conn.
Structural Engineers: Marchant and Minges, West Hartford, Conn.
Contractor: Ames Construction Co., Hartford, Conn.
Heating, Plumbing, Ventilating: Hubbard, Lawless and Blakeley, New Haven.

MAJOR DIFFERENCES—In Construction

	Temple 1954	Fitch 1956	Cost Added to base bid
Classroom walls, front & rear	*wood frame asbestos-cement facing—(Increases carpentry cost, see following table)*	*cinder block (Increases Masonry cost, see following table) sprayed with: vinyl plastic coating*	$4,500
Gymnasium, end wall	—	*rubber padding*	650
Gymnasium, floor	*asphalt tile*	*wood*	4,600
In 9 classrooms	—	*stamped steel grills in window sills*	2,300
	—	*pole and shelf in teachers closets*	1,500
	to 9 rooms—hot water and recirculating lines	*to 18 rooms—hot water and recirculating lines*	1,900
Total extras added to base bid			$15,450
Effect of of differences on costs of comparable facilities:			
Carpentry & Mill Work	$47,500	$35,550	
Masonry	54,835	61,000	
Asphalt tile (incl. gym)	8,100	9,200	
underlay + gym floor	820	—	
Wood floor, gym	—	4,600	
Vinyl coating	—	4,500	
Total	$111,255	$114,850	+ 3.23%

(Continued on page 66)

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MAJOR DIFFERENCES—In Bid Prices and Labor Costs

			Change %
High Bid as % of low	*111.7%*	*124.2%*	—
Base Bids per sq ft, low	*$13.78*	*$17.34*	*+25.83*
high	*15.40*	*21.49*	*+39.55*
Total contract price, with extras, per pupil	*$901.34*	*$1,155.23*	*+28.17*
Materials and Labor Costs:	*1954*	*October 1956*	
E NR Building Cost Index			
Boston	*669*	*744*	*+12*
New York	*742*	*845*	*+14*
20-Cities Av	*455.5*	*500.5*	*+10*

MINOR DIFFERENCES

	Temple St *1954*	Fitch St *1956*	Change *%*
Site, acres	*13*	*15½*	*+19*
Number of bidders	*13*	*10*	*−23*
Floor area, sq ft	*41,500*	*41,740**	*+ 0.58*

* *Includes covered glazed 30 x 8 ft passageway from main building to kindergarten*

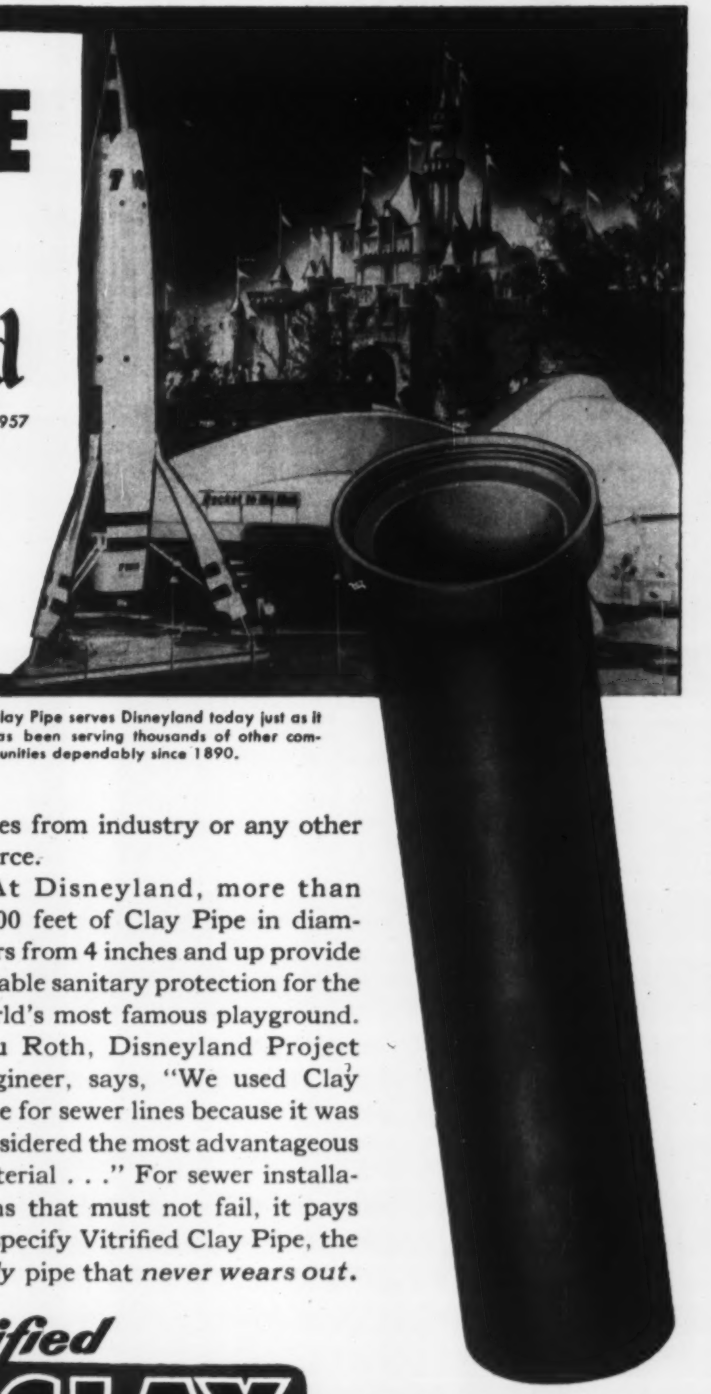
Diagnosis of Cause and Effect of Price Increase

	School		Change in	
Items Covered	Temple Street	Fitch Street	Dollars	Per Cent
Bid Date	10–27–54	10–5–56		
Floor area	41,500	41,740*	—	0.58%
General Conditions	$12,000	$14,000	$2,000	16.67%
Allowances	28,200	41,000	12,800	45.4
a) Kitchen Equipment	14,667	16,386	1,719	11.72
b) Finish Hardware	5,820	6,355	535	9.11
c) Planting	1,564	na		
d) Stage Curtains	2,590	na		
e) Walk-in Refrigerator	1,469	1,517	48	3.26
f) Booster Heater (for Dishwasher)	290	na		
g) Septic Tank	1,800	a-na		
Site Work	40,400	na		
Fence	550	na		
Concrete Curbs	915	na		
Total	41,865	87,000	45,135	
Footings and Foundations	42,500	53,000	10,500	24.44
Slabs and Beams (Concrete)	17,500	19,000	1,500	8.57
Reinforcing Steel	6,100	6,500	400	6.56
Structural Steel and Steel Joists	39,700	59,000	19,300	48.61
Masonry	54,835	61,000	6,165	16.06
Structural Tile	5,400	6,500	1,100	20.37
Incinerator	250	250	0	0
Precast Roof Deck	29,200	34,000*	4,800	16.44*
Per sq ft	($0.704)	($0.815)		(15.77)
Roofing and Sheet Metal	17,900	19,000*	1,100	6.15*
Per sq ft	($0.431)	($0.455)		(5.58)
Windows and Sills	19,600	27,600	8,000	40.81
Miscellaneous Iron	7,000	7,000	0	0
Hollow Metal Doors and Frames	$1,675	$2,000	$325	19.40
Acoustical Tile	3,500	4,100	600	17.14
Vault Door	480	500	20	4.17
Lath and Plaster	1,800	2,280	480	26.67
Tile and Marble	7,750	8,000	250	3.23
Toilet Partitions	850	945	95	11.18
Carpentry and Millwork	47,500	35,550	(−11,950)	(−25.16)
Filing Cases (built-in)	1,650	1,950	300	12.12
Chalk Boards, Glass (built-in)	2,400	3,900	1,500	62.50
Asphalt Tile and Linoleum	8,100	9,200	1,100	13.58
Glass and Glazing	7,570	10,750*	3,180	42.27*
Per sq ft	($0.182)	($0.258)		(41.76)

(Continued on page 68)

CLAY PIPE SERVES Disneyland PAST AND FUTURE

©Walt Disney Productions, 1957



SEWERAGE CONTRACTOR:
Ward Construction Co., Inglewood, Calif.
J. Sam Hammel, Burbank, Calif.

PROJECT ENGINEER:
Louis H. Roth

Clay Pipe serves Disneyland today just as it has been serving thousands of other communities dependably since 1890.

Walt Disney's fabulous make-believe worlds of the past and future at Anaheim, California, are served by timeless Vitrified Clay Pipe. It's the pipe with an unmatched record of past performance . . . and the greatest potential for the future. No matter what wastes may flow into the nation's sanitary systems—tomorrow or fifty years from now—Clay Pipe will go on giving dependable, trouble-free service, because it's chemically inert, completely unaffected by acids and gases from industry or any other source.

At Disneyland, more than 8,000 feet of Clay Pipe in diameters from 4 inches and up provide reliable sanitary protection for the world's most famous playground. Lou Roth, Disneyland Project Engineer, says, "We used Clay Pipe for sewer lines because it was considered the most advantageous material . . ." For sewer installations that must not fail, it pays to specify Vitrified Clay Pipe, the *only* pipe that *never wears out*.

THE PUBLIC
KNOWS
CLAY PIPE IS BEST

Vitrified
CLAY
CLAY PIPE NEVER WEARS OUT!
PIPE

NATIONAL CLAY PIPE MANUFACTURERS, INC.
1820 N. Street, N.W., Washington 6, D.C.

206 Connally Bldg., Atlanta 3, Ga. • 100 N. LaSalle St., Rm. 2100, Chicago 2, Ill. • 703 Ninth & Hill Bldg., Los Angeles 15, Calif. • 311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio

C-786-1

We Made Double Savings By Pouring Slabs and Columns With the Same Forms

R. B. Barkley, President, Sanford Construction Co., Sanford, N. C.

"We used Atlas Compo Forms to pour culvert slabs for the Winston-Salem East-West Expressway, then used the same forms to pour 30-feet columns. The slab set-up moved easily and quickly and your wedge system eliminated all seepage. On the column set-up a small crew was able to pour two columns each day. We are extremely well pleased."

ATLAS COMPO FORMS

For the easiest and most economical forming on your next job, write or call us now. Atlas Compo Forms are backed with a *cash guarantee of labor saving.*

IRVINGTON
FORM & TANK CORP.
20 Vesey Street
New York 7, N. Y.

	School		Change in	
Items covered	Temple Street	Fitch Street	Dollars	Per Cent
Steel Lockers	2,400	2,650	250	10.42
Painting and Finishing	12,900	17,000	4,100	31.01
Basketball Backstops	850	950	100	11.76
Venetian Blinds	3,225	4,175	950	29.46
Plumbing	35,000	44,000	9,000	25.71
Heating and Ventilating	65,000	86,100	21,100	35.38
Electrical	47,300	35,000	7,700	16.28
Low Base Bid Total	$572,000	$723,900	$151,900	26.55
Per sq ft	$13,783	$17,343		25.83
With Changes—Final Cost	$576,861	$739,350	$162,489	28.17
Per sq ft	$13.90	$17,713	$3.81	27.43
High Bid—Base	$639,000	$897,000	$258,000	40.38
Per sq ft	$15.40	$21.49	$6.09	39.55
High Bid as % of Low	111.71%	123.91%	——	——

*Items mainly affected by 240 sq ft roofed, glazed passageway added to Fitch Street School
a Septic tank (rock conditions, incl. in allowances total)
na not available as a separate price

Refuse Disposal

NYC $80 million program passes halfway mark

New York City's $80-million refuse disposal program has passed the halfway mark. The broad program includes 11 new refuse incinerators, modernization of 4 older ones, 8 new marine transfer stations and improvement of 2 built in 1940, and 3 marine unloading stations. Augmenting the program are temporary rehabilitations and permanent expansion or conversion of some of the facilities mentioned.

The $6-million modernization and rehabilitation of the East 73rd St. Incinerator and Garages (ENR Sept. 1, 1955, p. 51) is nearly completed and operation is expected to be resumed in a very short time. The $5-million Greenpoint Incinerator, however, met a serious setback when foundation difficulties were encountered. Now that these have been overcome, the project, started in early 1956, should be completed in about a year.

The Flushing Incinerator, after undergoing a $250,000-rehabilitation in 1956, is once again in operation.

With design completed, contracts are being advertised for construction of the South Bronx Marine Transfer Station at the foot of Hunts Point Ave. Later in the program, a modern incinerator also will be constructed.

Design has also been finished for an extension of the Betts Ave. Incinerator and contracts are being advertised. Capacity is to be increased from 800 tons a day to 1,000 tons.

Next in the refuse disposal program will be construction of the Southwest Brooklyn Incinerator for which designs are 70% complete. The incinerator will be built partly on existing land and partly on fill beyond the shoreline at the old Ulmer Park site on Gravesend Bay. Contracts are expected to be advertised this spring. Provision will be made for a future one-slip marine transfer station at the site.

As soon as property transfer matters are straightened out, construction of a small marine transfer station at West 216 St. and the Harlem River will start, probably in the spring or summer of 1957.

And concurrently with this work, designs will proceed on the remaining items of the disposal program, beginning with replacement of the Hamilton Ave. Incinerator in Brooklyn and the new Harlem Incinerator at West 132 St. and the Hudson River. The latter will replace an old one at East 139 St.

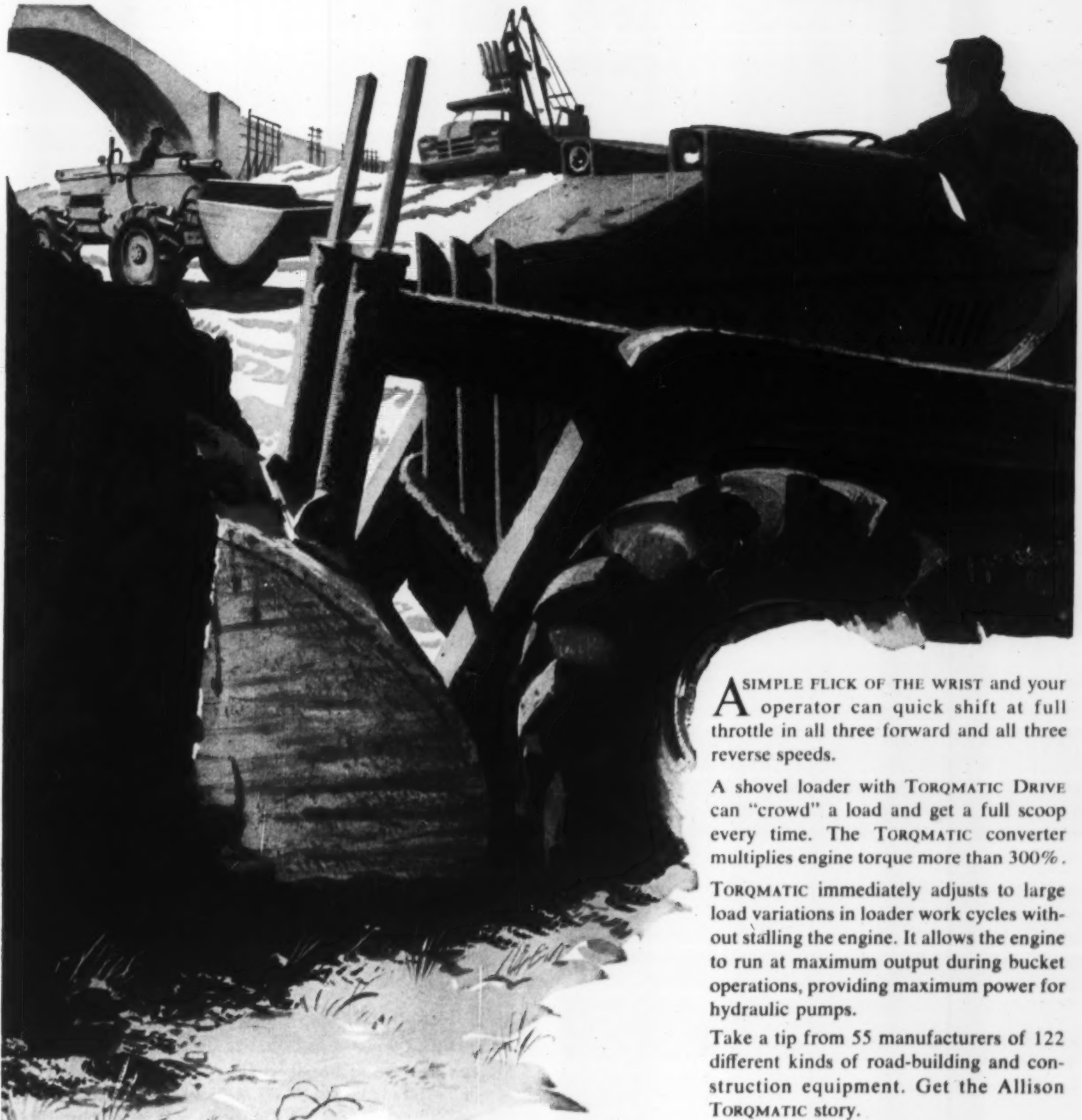
Akron University Offers Engineer Master's Degree

Akron University's board of directors is expected to approve a graduate program leading to the master's degree in engineering. It will be the first time the university will be offering classes leading to an advanced degree in engineering.

The new program has been made possible by a $15,000 annual grant from Goodyear Aircraft Corp. and Goodyear Tire & Rubber Co.

Courses will be given in the late afternoons and evenings to accommodate qualified students in area industry who have undergraduate engineering degrees from accredited institutions.

TORQMATIC loaders quick shift in all gears



A SIMPLE FLICK OF THE WRIST and your operator can quick shift at full throttle in all three forward and all three reverse speeds.

A shovel loader with TORQMATIC DRIVE can "crowd" a load and get a full scoop every time. The TORQMATIC converter multiplies engine torque more than 300%.

TORQMATIC immediately adjusts to large load variations in loader work cycles without stalling the engine. It allows the engine to run at maximum output during bucket operations, providing maximum power for hydraulic pumps.

Take a tip from 55 manufacturers of 122 different kinds of road-building and construction equipment. Get the Allison TORQMATIC story.

Ask your equipment dealer, or write:
Allison Division of General Motors,
Box 894E, Indianapolis 6, Ind.

NO. 1 IN A SERIES
ON SPEEDING AMERICA'S
ROAD-BUILDING PROGRAM

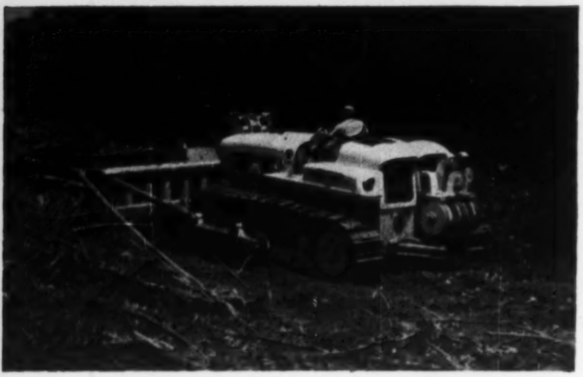
GM

TORQMATIC

Allison

TORQMATIC DRIVES

You save money



The Gar Wood Dozecaster has the stamina required by Euclid's powerful TC-12. Rugged C-frame resists distortion . . ."deep-anchored" lugs can't bend or smash. Screw-type thrust arms simplify moldboard tilting.

Contractor Lynn Ankrom of Decatur, Illinois, shown above, has dug over 55,000 feet of ditch with his Buckeye 308 with "no major repairs and no downtime to speak of at all!" Dependable production like this is one of the reasons why "Buckeye" has become the most famous name in ditchers.

GAR WOOD

PLANTS IN WAYNE AND

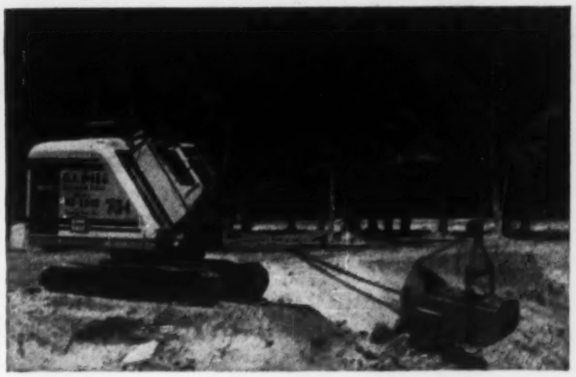
on maintenance when you go Gar Wood-Buckeye

Today's construction proves low input just as important as high output. You can depend on both when you go Gar Wood-Buckeye! With Buckeye ditchers you put in far less time and money on maintenance for the high output these machines deliver. Here's why:

First, Buckeyes are designed to *stand up longer*. Truss-type frame and massive, tractor-type crawlers resist even the heaviest shocks. More anti-friction bearings, fewer moving parts, and oil-bath lubrication of gears add up to long unit life!

Buckeyes also save money by being *easier to maintain*. Unit construction permits servicing without disturbing other components. Major assemblies and parts are interchangeable, cost less, and are readily available. Contact your Gar Wood-Buckeye dealer for additional facts, or write direct to: Customer Service Dept., Gar Wood Industries, Inc., Wayne, Michigan.

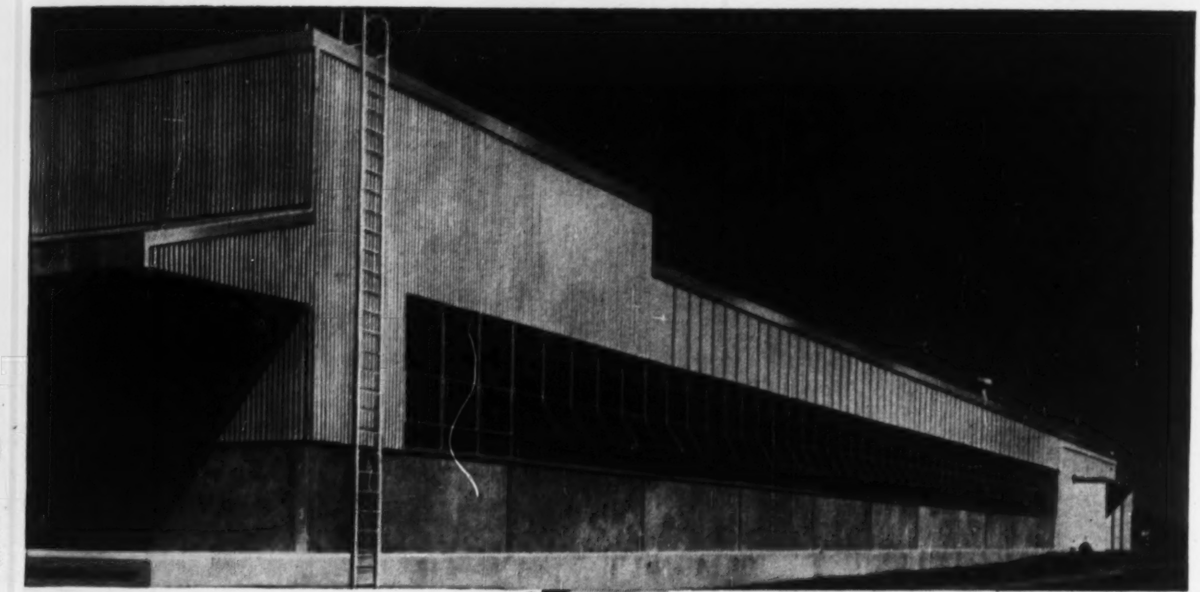
Gar Wood - St. Paul dump bodies and hoists are easy to maintain. Servicing can be carried out by regular mechanics working with ordinary truck tools. "Strong-Arm" hoist design eliminates one-sided dumping strain.



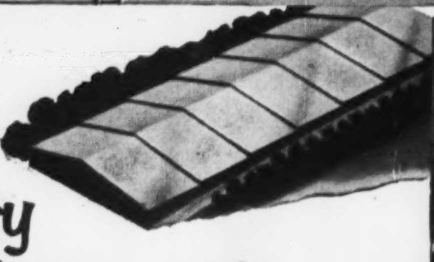
In the Gar Wood 75B, heavy-duty, conical-hook double rollers eliminate pin strain and rocking under load. Massive crawlers are built to take it. Compact design of the machinery deck makes parts easily accessible for servicing.

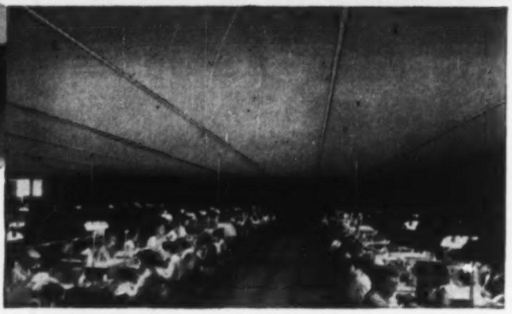
INDUSTRIES, INC. Wayne, Michigan

YPSILANTI, MICH.; FINDLAY, OHIO; MATTOON, ILL.; RICHMOND, CALIF.



Siding,
Roofing
and Ceiling...





Industry
builds better with

REYNOLDS *Lifetime* ALUMINUM

TRADE MARK

The building at the top, Century Mfg. Co. of Jackson, Miss., illustrates *Reynoside*...Reynolds *Lifetime* Aluminum ribbed-embossed siding. Shown in small silhouette is the 140,000 square foot roof of the Mack Trucks storage building, Allentown, Pa., covered with Reynolds *Lifetime* Aluminum Industrial Corrugated. And the photo at bottom right shows the *ReynoCoustic* ceiling of the Marion Electrical Instrument Company, Manchester, New Hampshire.

Together these installations demonstrate the many advantages of aluminum in industrial construction. As an exterior, it is rustproof, corrosion-resistant and heat-reflective...low in applied cost, low in maintenance. And in the form of *ReynoCoustic*, it is not only a highly efficient noise absorber...it can also provide a *superior* air-conditioning plenum. The Marion Company is enthusiastic about its draft-free distribution of clean, conditioned air to all points.

A complete installation service is available. For name of nearest franchised Jobber-Erector or Acoustical Applicator, call the Reynolds office listed under "Building Materials" in classified phone books of principal cities. Or write to Reynolds Metals Company, Building Products Division, 2046 S. Ninth Street, Louisville 1, Ky.

See "Circus Boy", Reynolds dramatic adventure series, Sundays, NBC-TV Network.

REYNOLDS ALUMINUM

BUILDING PRODUCTS

New Products

Ceiling Lighting System Comes as Packaged Unit

A new ceiling-wide lighting system for industrial and commercial use is supplied as a complete unit consisting of two parts—a ceiling-installed fluorescent grid system, and a suspended T-hanger aluminum framework, which holds plastic louver-diffuser panels.

Called "Strato-Lux, the fixture is claimed to provide glare-free, shadowless lighting by louver-diffusers, which give 25 deg crosswise and lengthwise shielding.

The grid system is available in sizes to fit any 8 x 8 ft or larger room, at a cost, not installed, between $2.15 and $3.15 a sq ft. Curtis Lighting, Inc., 6135 W. 65th St., Chicago 38, Ill.

Air Filter Extends Life Of Construction Equipment

A new heavy duty air filter that is said to permit uninterrupted operation of expensive construction equipment in dust laden atmospheres and at the same time extend the useful life of such equipment has been developed by Purolator Products, Inc.

According to the manufacturer, the filter is 99.5% efficient in protecting compressors and engines from wear.

Making use of a pair of heavy duty elements in series—each containing 4,800 sq in. of filtering area—the filter's positive action keeps abrasive particles of all sizes from delicate wear parts. The first-stage element has resulted in uninterrupted operations of up to 400 hours, with the only element servicing necessary being a daily air-washing and rapping for cleaning purposes, manufacturer's field tests show.

Available in 100, 200, 400, 600, and 900 cfm capacities, the air filters allow equipment to remain in operation during servicing of the first-stage element due to the efficiency of the second stage element, which provides positive filtration while element number one is air-washed and rapped for cleaning.

Housings of the unit are constructed of heavy gauge steel while the elements are made of convoluted, resin impregnated cellulose with 3/32 in. steel base and cover. An expanded metal protective body of 3/32 in. steel shields the element from damage during rough handling.

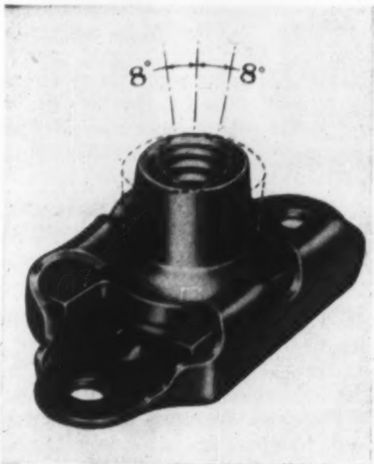
The unit itself is approximately 30 in. high and 19¼ in. in diameter, while each element is 10 in. in length and 10¼ in. in diameter. The entire unit weighs about 70 lb. Purolator Products, Inc., Rahway, N. J.

Anchor Nut Corrects Misalignment of Bolts

Accommodation of up to 8 deg angular misalignment in any direction between bolt holes and mounting surfaces is provided by a new, lightweight self-aligning anchor nut, the Kaylock F 1967.

The nut features a self-aligning nut element that "snaps to attention" for easy thread engagement when the bolt enters the nut. The ample float allows for tolerance build-up in the structure.

By eliminating the need for spot-facing or the use of tapered shims in many applications, both weight and construction costs are reduced, says the manufacturer. The self-aligning anchor nut is especially adaptable for aircraft structures such as tapered spars, tapered skins or die-fabricated parts having draft angles.



The nut is of all metal construction made in conformance with applicable requirements of military specifications, and is approved for use in temperatures up to 550 F.

Now available in ¼ in. tap size, the anchor nut soon will be available in additional sizes. Kaynar Co., 820 E. 16th, Los Angeles, Calif.

Koehring Excavator Takes A Two Cubic Yard Dipper

Newest addition to the Koehring line of excavators is the crawler-mounted 805—first shown at Chicago's 1957 Road Show—which can be used as a crane, a two-to-three cubic yard drag-line, up to a 3½ cu yd clamshell or a two cubic yard shovel.

Equipped with friction type steering brakes that are spring set and air power released, the manufacturer claims the rig can be turned within its own length when one crawler is completely locked. Main clutches have a mechanical power booster, cam action and automatic adjustment for heat expansion.

The excavator's bucket is crowded into the cut by a heavy roller chain. A high A-frame is standard equipment on all cranes using 75 ft booms or longer.

Six turntable and six hook rollers assure operating stability and evenly distribute the shovel's weight under any digging or lifting strain, say Koehring engineers. Turntable rollers, 12 in. in diameter and conical shaped to eliminate wear from scuffing, are machined from heat-treated high carbon steel drop forgings.

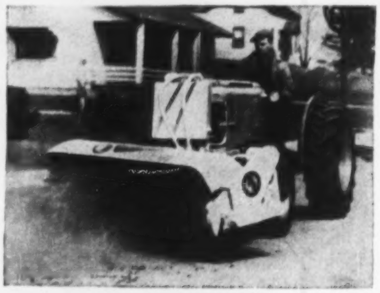
Antifriction bearings are used on the countershaft, horizontal swing and traction shaft, main drum shaft, and on all other shafts where speed is sufficiently high to justify antifriction bearings or where significant amounts of power can be saved from friction loss. Koehring Div of Koehring Co., 3026 W. Concordia, Milwaukee 16, Wis.

New Two-piece Heat Pump Cuts Costs, Space Needs

A 5 hp electric heat pump for year-round air conditioning of residential and small commercial buildings now is being produced in two units to save floor space and cut installation costs.

Called the Heat Pump Weathermaker, it employs outdoor air as a heat source. The outdoor air coil and the condenser are housed in a cabinet outside the building. The indoor unit, a little larger than a room air conditioner, can be installed in such locations as the attic, closet, ceiling or basement.

The manufacturer claims that the pump will achieve greater efficiency over the normal range of heating and cooling operation and that costs will run 20% lower than other packaged air-source heat pumps. CARRIER CORP., SYRACUSE, N. Y.



Operations Speeded With Hydraulic Sweeper

A two-way sweeper, completely hydraulic in drive and controls, has been added to the line of tractor-mounted sweepers manufactured by M-B Corp.

For fast sweeping, the broom may be angled 30 deg to the right or left. The hydraulic swing ram swings the broom to any position within the 60 deg radius and is controlled from the driver's seat. According to the manufacturer, the operation is further speeded by unique swing arms that keep the sweeping path centered ahead of the tractor, regardless of the broom angle. A second control raises and lowers the broom by means of the hydraulic lift ram.

The large hydraulic pump may be front or rear mounted depending on tractor make. Both swing and lift hydraulic rams are three inch, double-acting.

It is engineered to fit most popular make tractors, using essentially the same underframe as the M-B mechanical sweepers. Adaptation of this sweeper head is also being made for mounting in tractor front-end loaders in place of the bucket with a quick mounting arrangement. M-B CORP., NEW HOLSTEIN, WIS.

Fork Attachments' Design Boosts Loader Versatility

Two new attachments—a pallet fork and a pulpwood clamp fork—have been designed to be interchanged with the bucket and increase versatility of the Ottawa Industrial Front-End Loader.

The pulpwood clamp fork is used to load, transport and stack logs, lumber or any material requiring a hold-down device. The hydraulically controlled clamp prevents loss of load when traveling over rough terrain, thus speeding handling operations. The clamp, which is actuated through a special valve control section added to the standard loader control valve, closes down to the forks and opens to 8 ft 6 in. (from tip of clamp to forks) providing ample clearance.

The pallet fork attachment is used for handling all palletized materials such as concrete blocks, brick, lumber, building material and pipe. Held by the same four pins which normally carry the bucket, it can be interchanged with the bucket in 15 minutes. The fork attachment is equipped with a rear guard to prevent the load from rolling over the back of the carriage, and has a tilt back angle of 18 deg, with a dump angle of 40 deg at full height.

Pallet forks and pulp wood clamp forks are available in 30 in., 36 in., 42 in., 48 in. and 54 in. lengths, and carriage widths of 48 in. and 64 in. OTTAWA STEEL DIV., L. A. YOUNG SPRING & WIRE CORP., OTTAWA, KAN.

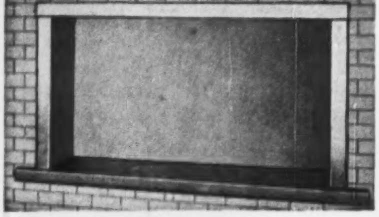
Felker Concrete Cutter Has More Spindle Power

A series of new developments incorporated on Felker concrete cutters include a non-slip, high efficiency timing belt drive. This single belt, equipped with lugs that engage gear-like teeth on the pulleys, transmits power equal to 16 vee-type belts of "B" sections, the manufacturer claims. This extra torque and constant rpm mean longer blade life, with consequent increase in footage per blade.

A Vickers variable speed hydraulic power drive applies smooth power to the rear wheels and it is said to enable cutting on steep grades without slipping or coasting and gives a variable control of from 0 to 90 fpm. A reverse also is provided for backing up under power and simplifying working in tight areas.

Other improvements include longer adjustable handles by which a light-

Peelle
Pass
Window



DINING ROOM SIDE

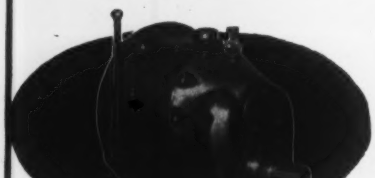
This unit consists of an integral hollow metal door and frame designed for quick, economical installation in schools, cafeterias, restaurants, ticket and baggage rooms, cloak rooms, gymnasium issue rooms, etc. Also with glass frame for hospital observation rooms and laboratories. Special extended sills furnished when specified.

See Sweet's Arch. File 33c/Pe, page 9.

THE PEELLE COMPANY
47 Stewart Ave., Brooklyn 37, N. Y
ALSO RICHMOND FIREPROOF DOOR CO
Richmond, Ind.

S-N

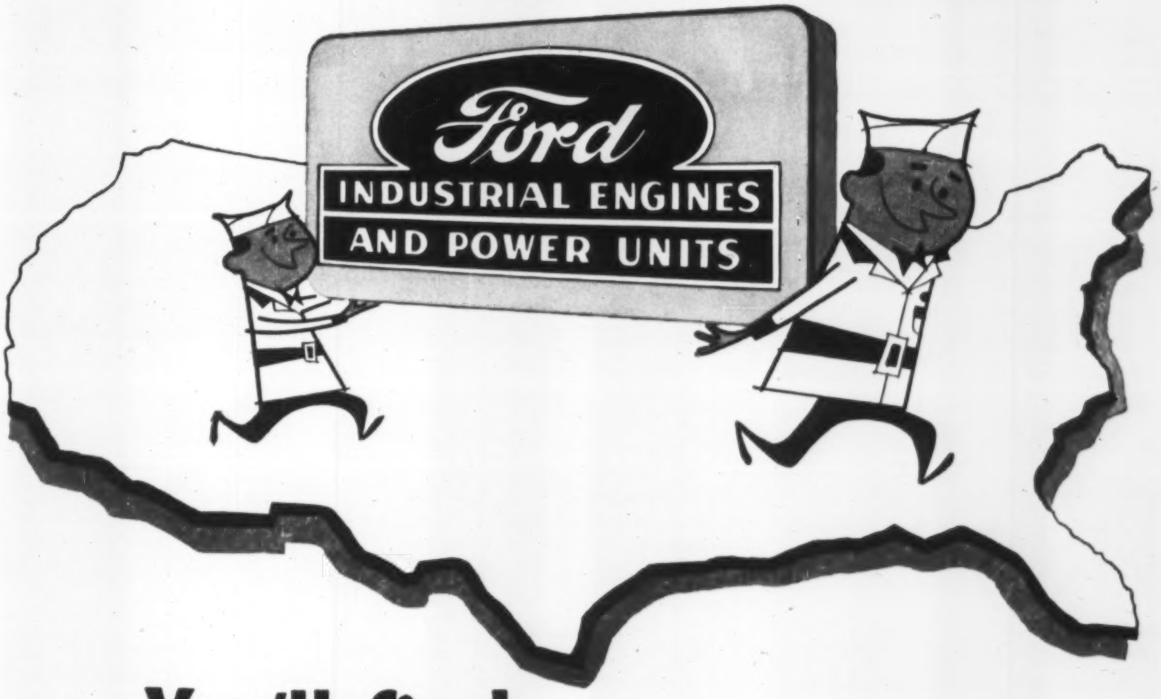
REDUCTION GEARS FOR HEAVY-DUTY EQUIPMENT



For use on Gasoline and Diesel engines . . . 7 models . . . cut-off clutch . . . 40 to 755 HP range . . . gear ratios 1:5.1 to 4:1 . . . up to 3300 lbs/ft engine torque
Write for complete information.

SNOW-NABSTEDT
Transmission Engineers
FOR HALF A CENTURY
"MAKERS OF JOE'S GEARS"
THE SNOW-NABSTEDT GEAR CORP, HAMDEN, CONN.

Whether it's repair or replacement...



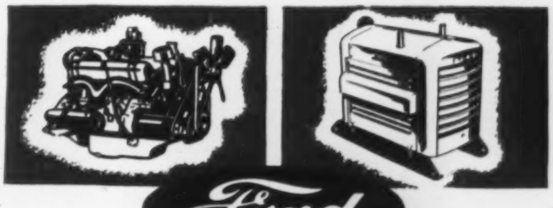
You'll find
Ford Industrial Engine Service is available everywhere!

Know why so many industrial power users are swinging over to *Ford* power? One reason is service.

Ford power users *know* there's always a Ford Dealer nearby to give service when it's needed . . . to keep downtime at a minimum. And because Ford Dealers carry an inventory of the more commonly purchased engine parts, the Ford power user need never invest in a big parts inventory of his own.

Also, across the country, you'll find a network of newly established Ford Industrial Power Headquarters. Each is equipped to repower any type of equipment with dependable, low-cost Ford power.

It's the availability of service like this—wherever you are—that helps keep your operating costs *low*. If you are considering a new power unit or engine assembly—4-, 6- or 8-cylinder—see your Ford Industrial Products Dealer. He will be very happy to discuss your power requirements with you and make sure you get the one right power unit for *your* job. Write to the address below for further information.



Ford

INDUSTRIAL ENGINES
AND POWER UNITS

INDUSTRIAL ENGINE DEPARTMENT • FORD Division of FORD MOTOR COMPANY
P.O. Box 598, Dearborn, Michigan

YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED!

HD-21
204 net engine hp
44,000 lb
Max. drawbar pull, 65,000 lb

This season do more BIG work

... with construction's best-proved torque converter tractors
... backed by 17 years of on-the-job experience
... thousands of profit-tested production models

More efficient dozing—Matched engine-converter-transmission team lets operator choose speed range for each job as he starts ... finish most jobs without further clutching or shifting (except for reverse). With full control at throttle, he can work safely and efficiently regardless of terrain.

Faster on tough scraper jobs—These Allis-Chalmers tractors multiply torque up to four and a half times ... develop maximum drawbar pull when it's needed most ... start the load smoothly regardless of material in the cut ... automatically accelerate to the highest speed that conditions permit.

Nothing like 'em on big loading jobs—The 3-yard HD-16G and 4-yard HD-21G tractor shovels are tough, mobile, flexible enough to pay big dividends on many projects. Operators can crowd surely and steadily ... without stalling, shifting gears or losing control of the bucket because of slow engine speeds.

ALLIS-CHALMERS

HD-16*
150 net engine hp
31,600 lb
Max. drawbar pull, 60,000 lb
*Also available with standard transmission

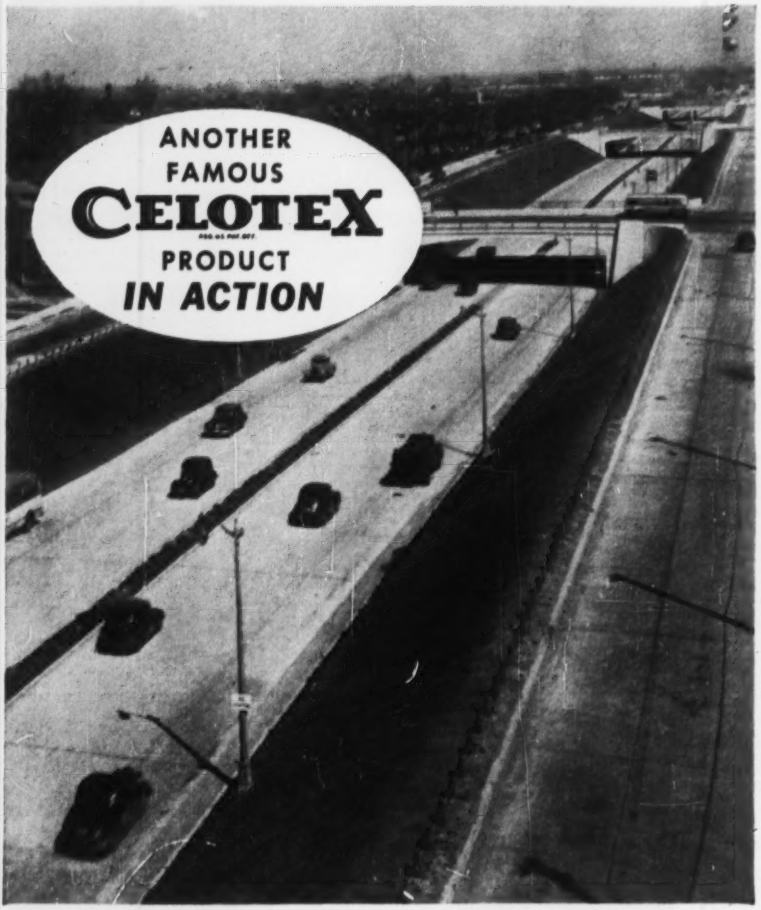
per man-hour . . . at lower cost

*N*o construction equipment dealer in your area knows torque converter tractors as well as your Allis-Chalmers dealer. See him . . . and get the benefits of 17 years' experience working for you. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

Longer life for big equipment—Hydraulic torque converter cushioning reduces shock and vibration on the power train, the entire tractor and its auxiliary equipment—mounted or drawn. That means less downtime, more production time . . . better profit protection on any job!

ALLIS-CHALMERS

Engineering in Action



Detroit Express Highway, typical use of Flexcell Joint Filler "wherever concrete meets concrete"

BEST LOW COST PERFORMANCE!

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EXPANSION JOINT FILLER

1st. Choice Across America!

Men meeting today's road-building challenge know an inch can be a chasm in concrete highway construction. They like the better combination of performance characteristics you get with Flexcell Joint Filler. You'll like its low installation and maintenance cost, too.

COMPRESSIBLE • NON-EXTRUDING • RESILIENT

Flexcell Joint Filler bonds firmly to concrete, compresses without extruding. Re-expands to keep joints filled, preventing intrusion of dirt and stones. Uniform asphalt impregnation, 35% by weight minimum. Unaffected by temperature extremes. Tough, rigid, light in weight. Easy to fabricate and install. Delivered to your specifications.

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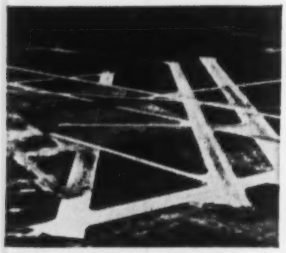
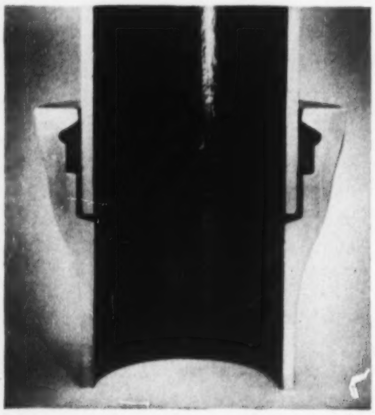


Cleveland Municipal Airport, where 2½ million people landed or took off last year on runways protected by Flexcell Joint Filler.

Rickenbacker Causeway between Miami, Florida, and Biscayne Key. Flexcell Joint Filler contributes to smooth riding and easy maintenance.

weight man can balance the unit on rear wheels for maneuvering; a pivoted engine mount for adjusting belt tension, which eliminates realignment problems; and a removable frame insert for easing access to spindle pulley for belt replacement. FELKER MANUFACTURING CO., 1128 BORDER AVE., TORRANCE, CALIF.



Cast Iron Pipe Joint Approved for 350 psi

Fast, simple assembly is claimed for new Clow cast iron pipe joint, which has been approved by Underwriters Laboratories for 350 psi working pressure.

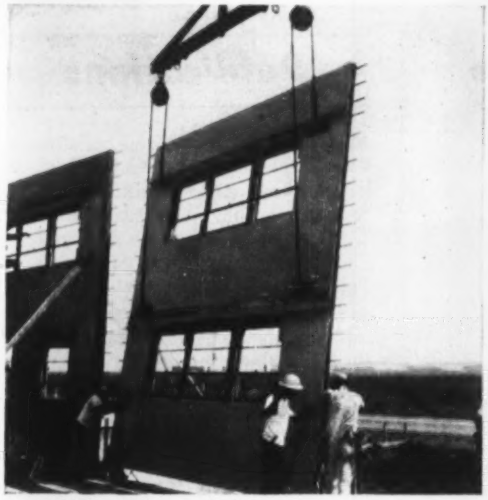
The rubber seal joint uses only a molded rubber gasket for its seal—no follower ring or bolts are required. It is called an all-weather joint that makes on tight under all trench or weather conditions so that speed of laying can be stepped up. JAMES B. CLOW & SONS, INC., 201-299 N. TALMAN AVE., CHICAGO 80, ILL.

High Speed Transmission Helps to Lessen Fatigue

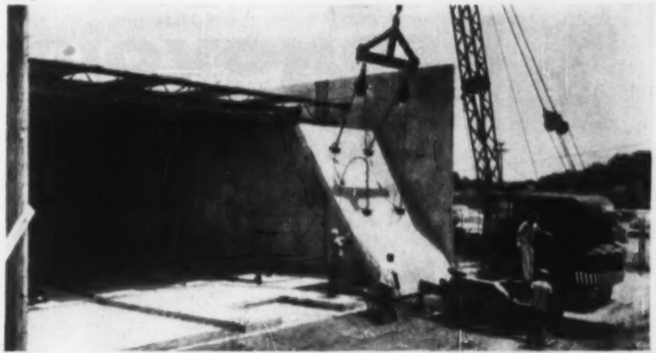
A chain saw said to feature faster cutting and less operator fatigue is made possible by a high-speed 2 to 1 gear-driven transmission and a 6 hp chain saw engine.

The saw is known as the Big Six and is available with bars and chains of from 19 to 42 in. long for one or two-man operation. It has an all position diaphragm carburetor, a special armored nose guard, a positive chain tightener and a fully automatic clutch.

Refueling is simplified by easily accessible oversized fuel openings. The starter has a nylon cord and an emergency starting drum. A convenient full throttle button also aids starting. An accessory tool kit, including a sprocket puller, is included. LANCASTER PUMP & MANUFACTURING CO., INC., MANHEIM ROAD, LANCASTER, PA.

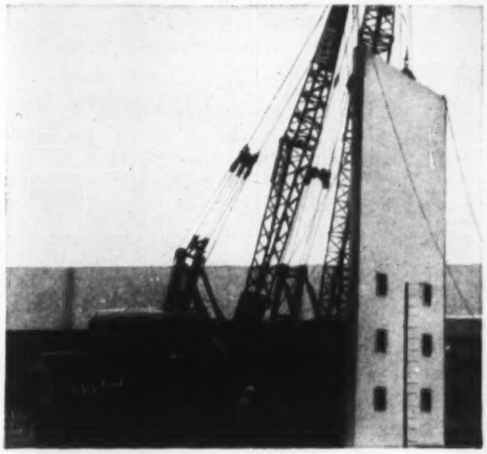


PANEL with large window areas

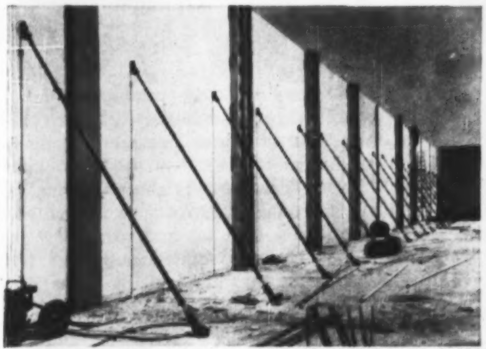


WAREHOUSE

DANIEL CONSTRUCTION CO. PHOTO



57 TON SLAB being positioned



DANIEL CONSTRUCTION CO. PHOTO

ADJUSTABLE BRACES used for quick and easy alignment of panels

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When an outstanding Tilt-Up job rates an article in a construction publication you can be almost certain that SUPERIOR products were used. The reason is simple. SUPERIOR, as the pioneer in this field, developed designs that were thoroughly tested both in the laboratory and the field to assure safety with economical prices and low application costs.

These "Pick-Up" Inserts, Brace Anchors, and Adjustable Braces have been used and proven on literally thousands of projects, not a few of which were unique in design. With a background of such experience, the recommendation of our engineers as to location and types of Inserts and Anchors is reliable and valuable.

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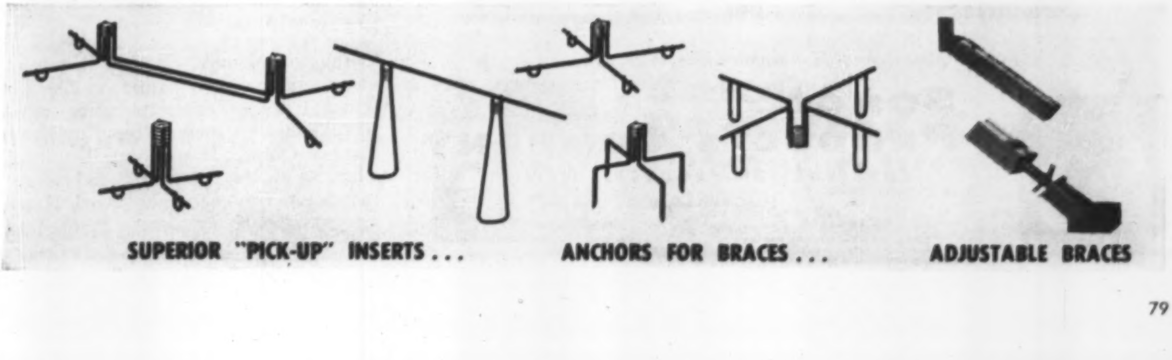

SONOVOIDS®

reduce the cost of slab floor construction!

Mystic Seaport Accessions Bldg., Mystic, Conn. Lovello & Naccarato, Contractors. Architect: Francis D. Rogers, Rogers & Butler, NYC and O. E. Liebig, New London. Photo by Martel.

SONOVOID®

FIBRE TUBES

for voids in concrete construction

Use low-cost SONOVOIDS to save money and materials in the construction of concrete slab floors!

These easily-handled fibre tubes are used to form voids in the slab to reduce weight, save concrete and reinforcing steel without impairing structural strength.

SONOVOID Fibre Tubes eliminate dead weight by displacing low-working concrete at the neutral axis.

Specifically developed for use in bridge decks, wall floor, roof and lift slabs . . . and in concrete piles . . . SONOVOIDS can be ordered in required lengths or sawed to fit on the job.

Available in sizes 2.25" to 36.9" O.D. up to 50' long. End closures available.

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Publications

Air compressors—A new bulletin entitled "No Contractor Can Afford To Be Without Self-Propelled Air Compressors" is offered by Schramm, Inc. This comprehensive folder describes and illustrates the versatility of Schramm's Pneumatractor, a combination 125 cfm air compressor and wheel tractor, which can be converted from one service to the other by a button on the instrument panel. Photographs show 18 ways contractors can use the unit, such as power shoveling, breaking out concrete, trenching, grading and rock drilling. Detailed specifications are given for both the standard and the heavy pneumatractor, including air delivery, bore and stroke, horsepower, dimensions and weight. SCHRAMM, INC., 900 E. VIRGINIA AVE., WEST CHESTER, PA.

Drilling accessories – Mobile Drilling, Inc., has combined all its descriptive literature in a catalog-packet for the convenience of contractors, aggregate prospectors, state and government highway departments and others in the soils engineering field. Most of the catalog is devoted to an extensive line of earth drilling accessories including augers, core barrels, drilling heads and bits, winches and other equipment. Pockets on the inside front and back covers carry additional literature on the company's complete line of mobile rotary drilling rigs, as well as the story of Mobile's soil and foundation engineering service. MOBILE DRILLING, INC., DEPT. 19, 960 N. PENNSYLVANIA ST., INDIANAPOLIS 4, IND.

Aluminum highway products—A brochure giving information on the complete line of Kaiser aluminum highway products now is available. The booklet, "Kaiser Aluminum Highway Products", gives detailed design, construction and installation data for bridge railings, extruded highway signs, sign blanks and accessories that are available from Kaiser. Photographs, scale drawings and handy tables giving data on dimensions, alloys and weights facilitate use of the brochure. KAISER ALUMINUM & CHEMICAL SALES, INC., HIGHWAY PRODUCTS SALES OFFICE, 919 N. MICHIGAN AVE., CHICAGO 11, ILL.

Curing compounds – A new brochure gives complete information on the different types of concrete curing compounds that are manufactured by Hunt Process Corp. It describes how and where to use the compounds and recommends procedures to be followed. HUNT PROCESS CORP. SOUTHERN, P. O. BOX 420, RIDGELAND, MISS.

(*Publications continued on p. 81*)

Asphalt plants—A 16 page bulletin has been released describing the R-M line of semi-portable asphalt batch plants from 2,000 to 6,000 lb capacity. Also published is a 4 page bulletin on the TM Mobile Mixer, which is completely self contained on a single trailer frame. Especially designed for on-the-job mixing in rural areas and out-of-the-way locations, the new TM mixer in capacities up to 2,000 lb can be erected in less than 30 minutes and is ready to produce asphalt mix in a few hours, according to the manufacturer. Shown in photos and thoroughly discussed in the text are essential parts of both plants. Specifications and accessories such as heating units, fuel-pump assembly and dust collectors are described. Road Machinery Div., Standard Steel Corp., 5001 S. Boyle Ave., Los Angeles 58, Calif.

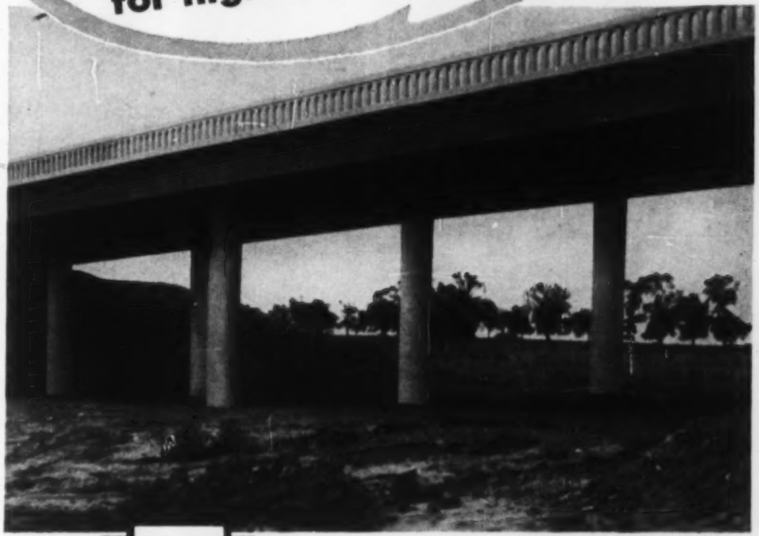
Bituminous paver—A bulletin describing a new bituminous paver has been issued. It describes how—by using the new Vibromatic principle of operation—this paver has met with outstanding success on different types of paving jobs throughout the country. The bulletin (No. 655-2) also contains specifications, dimension drawings and numerous photographs, both of the on-the-job and of the machine-feature varieties. Pioneer Engineering, Div. of Poor & Co., Inc., 3200 Como Ave., Minneapolis 14, Minn.

Motor graders—A 16 page catalog (MS-1148) on Grader Model-45 is available. Photographs, sketches and other instructive illustrations aid readers visualize details of the motor scraper's mechanical features and components. On-the-job photographs assist in telling the performance, operating, comfort and service simplicity of the "45". The catalog also has information on attachments and accessories that add to the versatility of the unit, and includes its specifications. Allis-Chalmers Manufacturing Co., Construction Machinery Div., Milwaukee, Wis.

Transit-mixer—The new truck engine drive, Transcrete, is fully described in a bulletin now available. With the aid of illustrations, the bulletin covers the power connector and drum drive unit as well as advantages of the TED Transcrete. Construction Machinery Co., Waterloo, Iowa.

Scalping Plants—Portable intermediate scalping plants that provide intermediate crushing and scalp off unwanted fines and dirt are illustrated and described in an 8-page bulletin. Iowa Mfg. Co., Cedar Rapids, Iowa.

LOW-COST SONOTUBES® form support columns for highway bridges!



Highway Bridge in Topeka, Kansas. Designed by Bridge Dept., Kansas State Hwy. Comm. J. W. Frisbee, Kansas City, Mo., contractor

SONOTUBE®

FIBRE FORMS

for round columns of concrete

The supporting round concrete columns for the bridge structures built on the relocation of U. S. Hwys. 40 and 24, west of Topeka, Kansas, were formed by low-cost Sonotubes. The bridge decks contain hollows formed by low-cost Sonovoids.

Columns like these cost less to construct because Sonotube Fibre Forms need only minimum bracing, take less time to erect and require fewer men for the job. These low-cost, lightweight, easily handled fibre forms can be sawed to size at the site or ordered in specified lengths.

Save time, money and labor . . . use Sonotubes on your next job! Sizes from 2" to 48" I.D. up to 48' long. Order Sonoco's patented "A-Coated" Sonotubes for finished columns; wax-coated also available.

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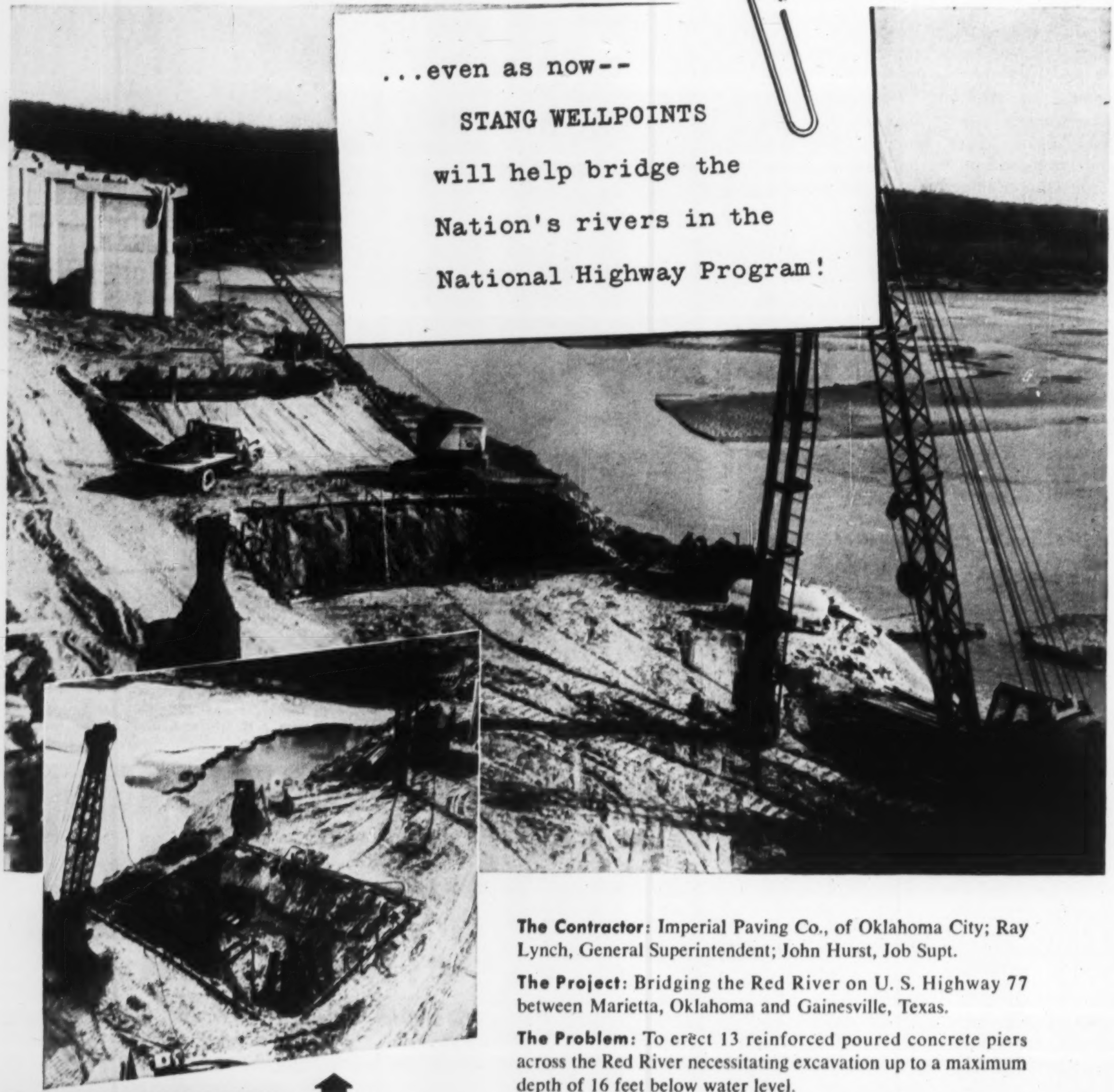

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STANG WELLPOINTS

will help bridge the

Nation's rivers in the

National Highway Program!

The Contractor: Imperial Paving Co., of Oklahoma City; Ray Lynch, General Superintendent; John Hurst, Job Supt.

The Project: Bridging the Red River on U. S. Highway 77 between Marietta, Oklahoma and Gainesville, Texas.

The Problem: To erect 13 reinforced poured concrete piers across the Red River necessitating excavation up to a maximum depth of 16 feet below water level.

The Solution: Installing a Stang Wellpoint system progressively around each pier location on a previously constructed earthen dyke thus lowering the ground water level to the required depth.

Result: A completely dry working area in a water-saturated riverbed making possible a *time-saving and profitable job!*

Call on STANG engineers for experienced services and special equipment to solve your water handling problems—any size, any type, *anywhere!* STANG engineers are on call in your area for consultation day or night.

The Red River bridge is a joint Texas-Oklahoma project under the direction of the Texas Highway Department, Mr. John G. Simpson, resident engineer.

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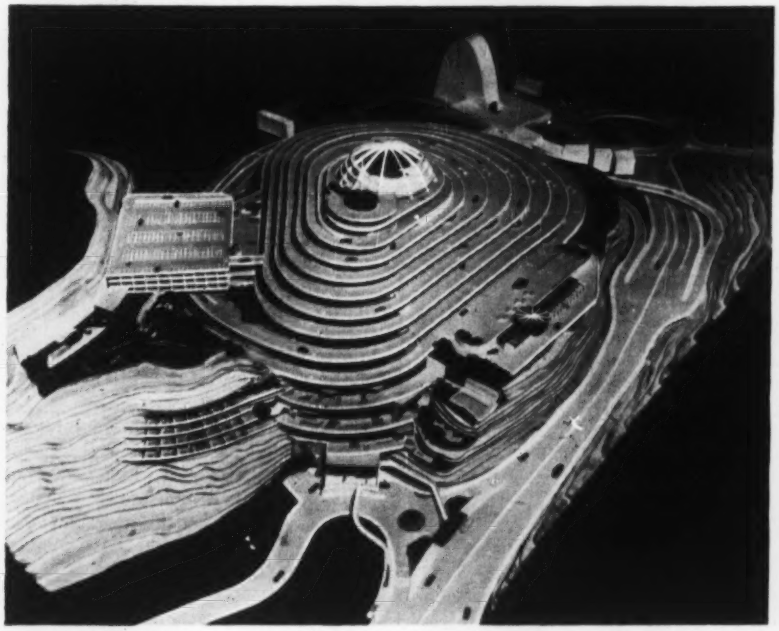
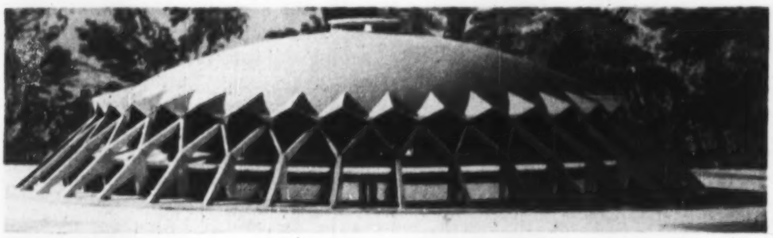


Spiral Market To Wind Around Hill

A $25 million shopping and business center now under construction in Caracas, Venezuela, will wind round and round a 25 acre hilltop overlooking the city. Called the "Helicoid," the project will feature a spiral auto ramp, ascending on a 2½% grade, on which motorists can drive to the various levels. Parking space will be provided in front of the shops. For pedestrians there will be elevators, ramps and escalators.

The development will incorporate 320 small stores, a hotel, swimming pool, garages, business offices and an exposition hall. Completion is scheduled for 1960.

Two Venezuelan companies, Inversiones Planificadas Investment Co. and the IVECA Construction Firm, are financing the project and will operate it cooperatively. IVECA is also the contractor on the job, jointly with INACA, another Venezuelan builder. The project was designed by Venezuelan architect Jorge Romero Gutierrez.



Concrete Dome Will Be Partly Precast

The thin-shell concrete roof of a circular sports arena to be built in Rome will serve in part as its own formwork. Instead of being cast monolithically, the spherical shell will be precast and erected in sections, then bound together as a unit by a final layer of concrete on the assembled parts.

Designed by Pier Luigi Nervi, engineer, and A. Vitellozzi, architect, the building will be used for the fencing and boxing matches of the 1960 Olympics. It will have an interior diameter of 194 ft and a seating capacity of 5,000.

Both the vertical loads and outward thrusts of the shell will be borne by 36 concrete buttress frames spaced around the perimeter. The outer leg of the frames will extend the overall diameter of the structure to 256 ft.

Builders of the project are Nervi & Bartoli, Rome.

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Here is a steel tape that stays clear and legible long after markings on other tapes have worn off.

An amazingly tough plastic coating on both sides of the line protects the white background, the graduations and numbers on ALBADURE tapes, giving their surfaces tremendous resistance to abrasion and corrosion. To quote a State surveying party report, "If ALBADURE stood up in this tough mud and sand, it'll stand up anywhere." Available in all standard lengths, widths and graduations, in cases and on reels.

PHOENIX WYTEFACE®... the woven tape that outlasts others 3-1

PHOENIX WYTEFACE (non-metallic) Woven Tapes made from extra strong synthetic yarns, are harder wearing, with higher tensile strength and dimensional stability than ordinary woven tapes. A special plastic coating on both sides protects the line against hard use, water, stones or brush.

The end of the line is enormously strengthened by a lamination of Flexi-Foam, a spongy plastic-rubber. No stitches or hinge point to weaken the line.

A Highway Engineer reported of the non-metallic PHOENIX WYTEFACE, "It has at least three times the life of an ordinary metallic tape." *Ask Your K & E Dealer!*

*Trade Mark

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Research

Chicago Tells All

Waterworks chief reports on development

The February issue of PURE WATER, Chicago Bureau of Water's regular monthly publication, contains a revealing glimpse of the great amount of practical research under way at the city's 320 mgd South District Filtration Plant. Purification Engineer John R. Baylis has written a year-end report that comments on many modifications that are likely to become standard practice in filter plants. Here is what one of the country's leading filtration engineers has to say. . . .

On chlorinators: To obtain information on different makes, one rotometer type of chlorinator without trays or bell jar, of small capacity (Fischer & Porter), was installed more than a year ago. This machine has given good service up to the present time. It has few working parts and the maintenance costs should be very much less than for the old machines now in use.

On liquid alum measurement: In 1956, a change was made from rotometers for measuring the flow of liquid aluminum sulfate to rotodips. Trouble developed by material occasionally crystallizing in the rotometers to cause inaccuracy of such meters. The rotodips are more open than rotometers and any tendency for clogging can be washed away very easily.

On butterfly valves: Previous reports have mentioned the wear on backwash gate valves. A few of these that were leaking badly have been repaired by inserting a rubber seat butterfly valve inside the body of the gate valve. This appeared to be a cheap method of repairing the gate valves. Now the price of rubber seat butterfly valves has dropped to the extent that a new valve can be purchased for the same cost of the insert valve. Several leaky gate valves on the surface wash system were replaced with rubber seat butterfly valves. In 1954 one filter was equipped with a rubber seat butterfly valve on the effluent line that acts both for cut-off and rate control. It continues to give satisfactory control of the filtration rate.

On filter beds: There is movement of the fine layers of gravel in some of the filters, which causes mounding and some sand leakage. In one filter, 6 in. of the finer gravel was removed and replaced with a granular material produced from molten fluedust from a power plant. It has a specific gravity of 3.0, compared to 2.55 for the original fine gravel. The hope is that this will be more difficult to move during backwashing.

On sand and gravel handling: For more than a year we have been developing a method of removing sand and fine gravel from filters with a sand pump. It works well enough to be regarded as a satisfactory method. Further use should show that it is the most economical method. Sand has been returned to filter beds by pumping.

On magnetic flow meters: A 20 in. magnetic flow meter was installed on a filter effluent line in advance of the venturi meter. It is giving accurate measurement of water flow.

On sediment scrapers: On one of the scraper units, every other wooden flight was removed from the chain, leaving 20 ft between flights. On another unit, two flights were removed leaving 30 ft between flights. Both arrangements have removed sediment in a satisfactory manner. Scraper units for the 960 mgd Central District Filtration Plant (now under construction) may have flights at least 20 ft apart.

On chemical handling: Equipment for handling activated carbon in the slurry form is now nearly completed. It is anticipated that 95% of the carbon will be handled in this form. Delivery of liquid alum has been so regular there have not been many occasions requiring return to dry feed. Success in handling liquid alum prompted handling ferrous sulfate in the liquid form. Conversion of dry bins to liquid tanks is under way.

Film to Slow Evaporation Is Slated for More Tests

The U. S. Bureau of Reclamation is starting experiments this spring in a study of how to apply and maintain a layer of chemicals to reduce water loss through evaporation.

Hexadecanol, or cetyl alcohol, is the substance to be used (ENR Mar. 21, p. 90). The nearly invisible chemical will be applied in a layer about a millionth of an inch thick on the 97 acre surface of Rattlesnake Reservoir, 12 miles west of Loveland, Colo. The tests will be concerned chiefly with evaluating methods of spreading the chemical across the reservoir surface to hold down water loss amounting to 4 ft of depth.

Tests on a small scale last year near Oklahoma City showed little or no effect on fishlife, taste or odor of the water, fauna or water organisms from the use of Hexadecanol, according to R. J. Walter, Bureau regional director at Denver.

The shock of bucket digging into dirt never reaches the engine, because the National Torque Converter absorbs vibration and shock. Converter sizes: 100 to 1000 hp.

When will Torque Converters be standard equipment on big machinery?

It's already started. Look at the picture and you'll see why. A brief instant ago that power-shovel bucket was carrying zero load. Then it rammed into the bank. A second later the load shot up to several tons. Yet the engine is in no danger of stalling. It won't even labor. In that second, the National Torque Converter automatically adjusted the speed of the bucket—down—and its power—up. The engine hardly felt it.

A National Torque Converter saves a little time on every work-cycle of the machine, because it lets the machine work at its top capacity for the entire cycle. Over the day it's a lot of time and a lot of work. If you operate heavy-duty machinery from 100 to 1000 horsepower, it can make a lot of difference in your profits too.

How big a difference? Put our 20 years of experience with high-power fluid transmissions to work finding out for you. Our engineers will investigate your power-transmission problems and give you the answers. Write: The National Supply Company, Two Gateway Center, Pittsburgh 22, Pennsylvania.

THE NATIONAL SUPPLY COMPANY
INDUSTRIAL PRODUCTS DIVISION
Two Gateway Center, Pittsburgh 22, Pa.

Pace-setters in the progress of industrial power transmission

Highway Costs Rising

America's Grand Plan needs the economy of

The Federal Highway program is barely under way. Yet, construction costs already have gone up 4%, according to official figures.

But here's good news! Savings from durable Asphalt construction . . . savings from low, quick and easy maintenance . . . can go a long way toward keeping the costs of *your* much-needed new roads within your ability to pay.

Experts say that *3 billion dollars* in original costs alone can be saved on the Interstate System with modern Asphalt pavement. And a substantial part can be realized by *your* state . . . your community.

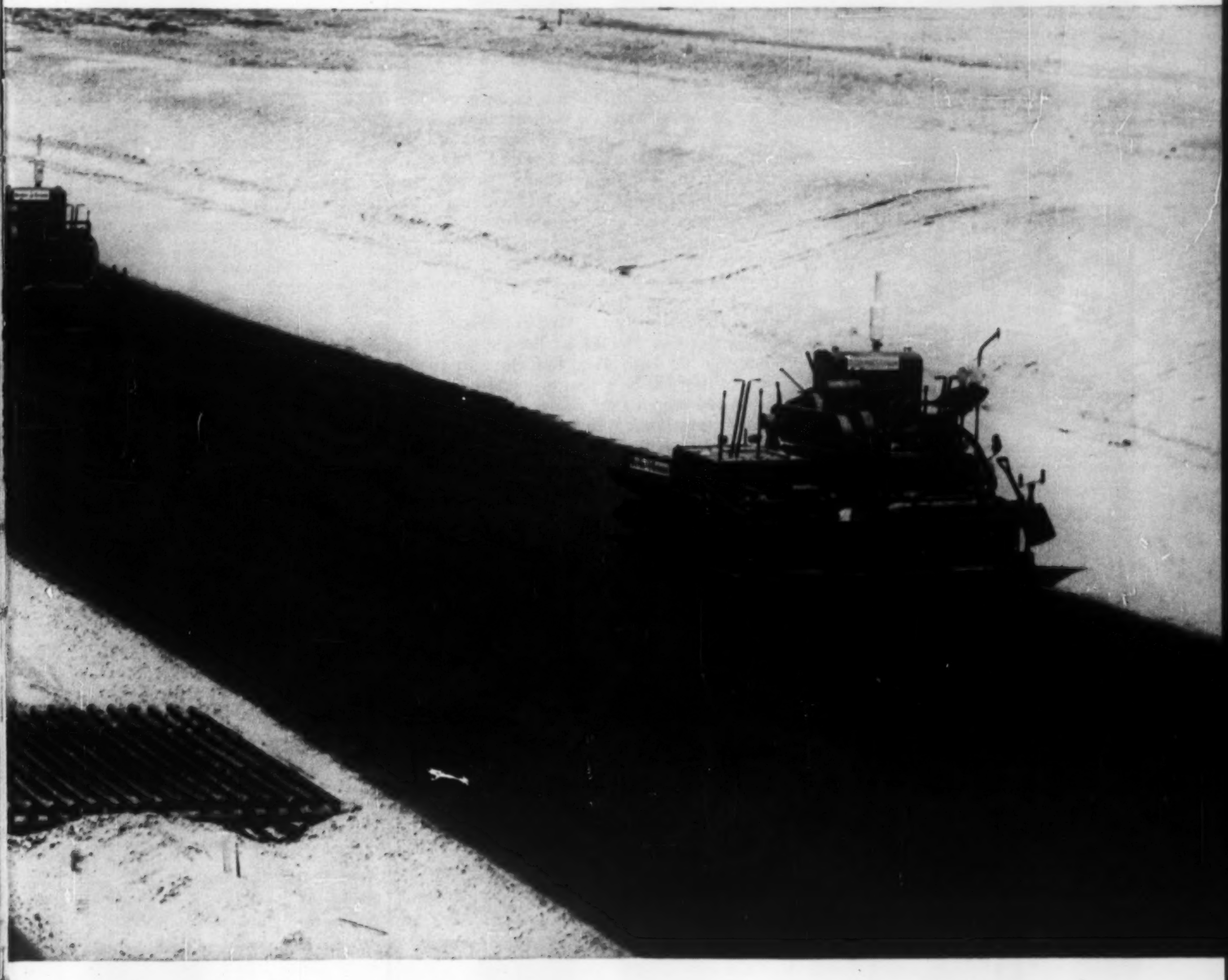
SMOOTH-RIDING, SAFE HIGHWAYS ARE YOURS, TOO

Yes, at lower cost to the taxpayer, Asphalt pavement provides more, better and wider highway. With smooth-riding, tough, resilient, skid-resistant surfaces. Glare absorbent pavement that is easier on the eyes. Lane markings that are easier to see day and night.

No wonder that four out of five miles of paved roads in the U. S. are surfaced with Asphalt!

So, specify Asphalt construction now! You won't have to worry about getting Asphalt, either . . . when the time comes. For, unlike some other construction materials, **Asphalt** *is in plentiful supply.*

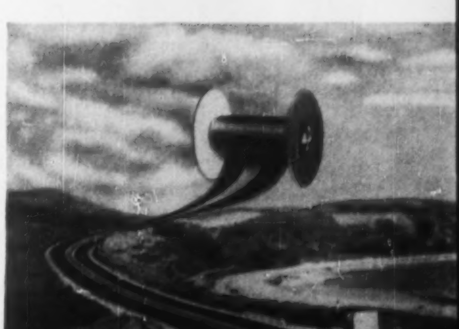
–Already UP 4%!



Modern ASPHALT construction

MODERN ASPHALT CONSTRUCTION is a triumph of road-building science. With built-up layers that spread the load . . . hug the earth . . . absorb shock and pounding without cracking. Layers topped off with smooth-riding yet textured skid-resistant modern Asphalt pavement. Economy, comfort and safety are built in *to last* . . . with this modern durable Asphalt construction. Built in to save you tax-dollars.

THE ASPHALT INSTITUTE, *Asphalt Institute Building, College Park, Maryland*



Ribbons of velvet smoothness . . .
MODERN **ASPHALT** HIGHWAYS

From our
50th Anniversary Album

Photo by Buffalo Evening News

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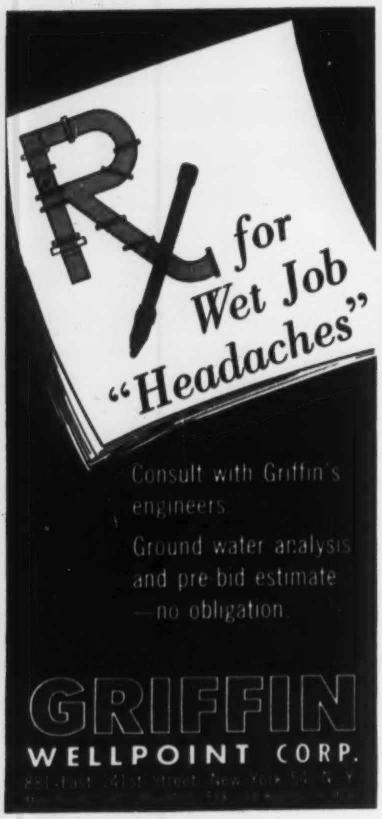
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Field and Office

Cooling Water Heats

Heat pump at Dalles Dam uses generator coolant

A heat pump installation using generator cooling water as a heat source will provide year round temperature control in the powerhouse at The Dalles Dam on the Columbia River. Selection of the heat pump system, according to the Corps of Engineers, was based on successful results achieved by a sister installation, the first of its type, in operation for over a year at McNary Dam upstream.

On the heating cycle, river water will be used first to cool 14 80,000 kw generators at the dam. Heat that the water so picks up will be given up to refrigerant in the evaporation side of a refrigeration compressor. In turn, the heat will be transferred to condenser water which circulates to air handling units at 105 F.

On the cooling side, water flow is reversed. River water circulates to the condenser where it picks up heat from the refrigerant. Chilled water for the air handling units circulates to the evaporator side.

Principal components of the heat pump system will be three 150 hp refrigeration units supplied by The Trane Co., La Crosse, Wis., and capable of 500 tons of refrigeration. These feature centrifugal compressors equipped with variable inlet vanes which tend to flatten efficiency curves.

Year around design temperature for the generator room is 50 F, and for the remainder of The Dalles powerhouse 70 F.

An anticipator control will automatically start and stop the refrigeration units. An operator determines how many centrifugals to run.

SPRAYED AREA gleams white in contrast to vegetation-loaded unsprayed section.

Levee Riprap Is Kept Free of Growth

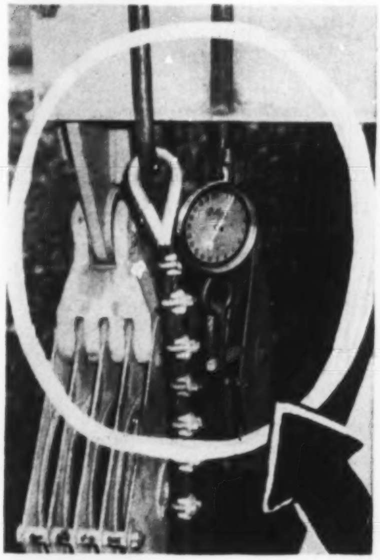
Levee riprap is kept free of vegetation —with its attendant "sink holes" from rodent burrows and undermining by roots of large growth—through use of a penetrating weed killer called Telvar.

The cleaner is being used on a stretch of levee on the Missouri River between Kansas City and North Kansas City. Built by the Corps of Engineers, the nine miles of levee are of standard construction, formed to a 2:1 slope with a 2½ ft deep layer of limestone riprap.

Vegetation control was started by the North Kansas City Levee Board on the levee of one bank of the river before any growth could start. The chemical was sprayed on and followed by a touch-up of missed spots the second season. The result: Growth is almost non-existent. The opposite bank, untreated, holds vegetation standing over 6 ft high.

An older levee, heavily overgrown with willows and some cottonwoods, also was sprayed and the growth substantially reduced. Spot treatment has prevented regrowth.

Frank A. Keckler is superintendent of the levee board. Telvar is a product of E. I. du Pont de Nemours & Co., Inc.



Dynamometer . . .

. . . Protects Sluice Gates

The heavyweight dynamometers shown provide overload protection to the beams supporting sluice gate hoists at Chief Joseph Dam on the Columbia River in Washington. Danger point for each hoist is 100 tons, but 16 part line allows 20,000 lb capacity dynamometer to be used (danger point at 11,250 lb).

Gages used at Chief Joseph were manufactured by W. C. Dillon & Co., Van Nuys, Calif. The company makes them up to 100,000 lb capacity and claims they are virtually unaffected by the weather.

A TROWEL BLADES IN MOTION

B CLUTCH CONTROL ON HANDLE IS RELEASED (NOTICE OPERATOR'S LEFT HAND)

C WITHIN 1/4 TURN, OR 1/6 OF A SECOND, THE BLADES ARE COMPLETELY STOPPED

MOVIE FILM PROVES STOW ROTO-TROWEL STOPS *INSTANTLY!*

Close up of manually actuated clutch control which stops blade rotation within 1/6 second, when handle is released.

Just one of the big reasons why STOW ROTO-TROWELS are your best trowel buy! Within *one-sixth of a second*, Stow's Dead-Man Clutch Control stops the blades, but not the engine! That means Stow Roto-Trowels are SAFER, because the trowel blades stop the very *instant* the lever is released. What's more, this clutch makes the engine easier to start, since full throttle can be used if necessary. Stow Roto-Trowels also feature: fixed, non-rotating guard ring; pitch control on the handle; adjustable handle; lifting hook on the engine.

Available in 24, 29, 34 and 46" trowel diameters, in gas or electric models, Stow Roto-Trowels are built for safety and long life . . . built to produce excellent concrete finishes. For complete information on Stow Roto-Trowels, write for Catalog 560.

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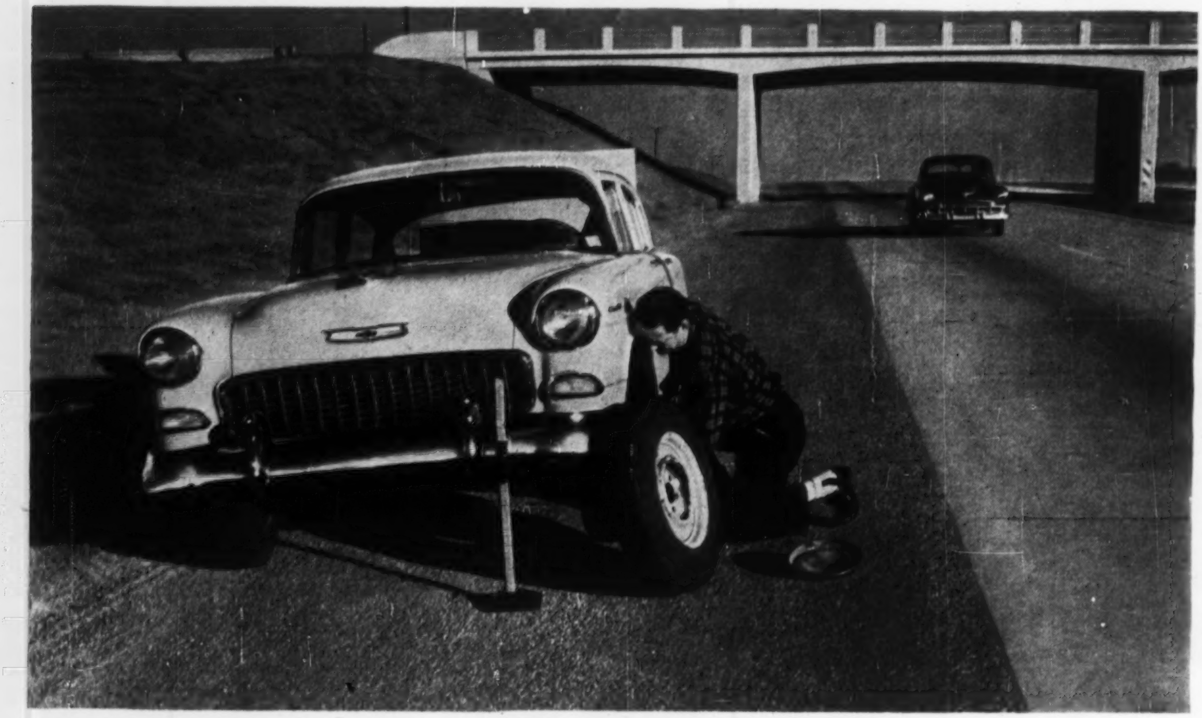

SOIL-CEMENT—the durable, economical pavement for shoulders on the National Interstate System

One of the notable specifications for the 41,000-mile National System of Interstate and Defense Highways now under construction is the provision that "Shoulders usable by all classes of vehicles in all weather shall be provided."

These shoulders will need to be as long-lasting and durable as the adjacent traffic lanes they are built to serve. That means they should be paved with soil-cement—the only low-first-cost pavement that is sturdy enough to serve for many years and deliver safe, dependable, all-weather service with a minimum of maintenance.

Paving the shoulders on the Interstate System with soil-cement will be economical. About 85% of the material needed will be soil on or near the site. Mixed with portland cement and water, this material provides a sturdy base. Usually a bituminous surface completes the shoulder.

Soil-cement is built to last. It's so durable that practically all of the soil-cement paving built since 1935, when scientific controls were introduced, is still giving all-year, all-weather service with only occasional surface maintenance.

For more information about soil-cement paving write today for free illustrated literature. It is distributed only in the United States and Canada.

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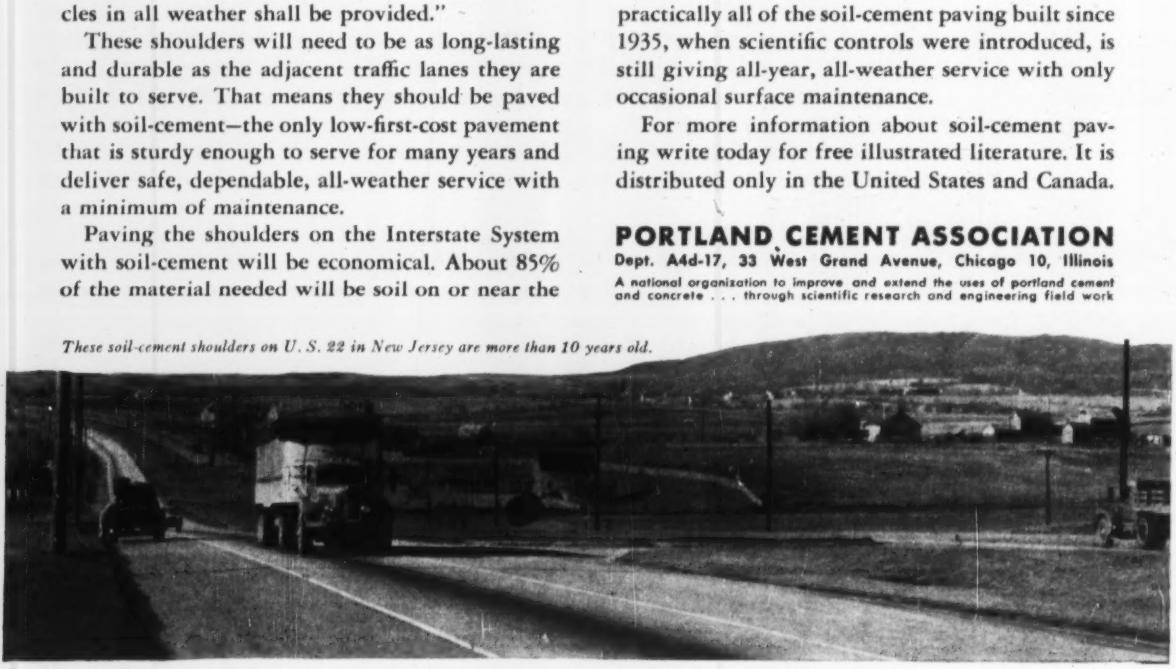
A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

These soil-cement shoulders on U. S. 22 in New Jersey are more than 10 years old.



Men and Jobs

Maj. Gen. John R. Hardin

Mississippi River Engineer Plans to Retire on June 30

Corps of Engineer Maj. Gen. John R. Hardin, for the last four years president of the Mississippi River Commission and division engineer, Lower Mississippi Valley Division, has announced plans to retire effective June 30. He will be leaving the Army after 38 years of service, most of them in flood control and navigation work on the Mississippi.

Some recent major projects he has been associated with are the Old River control project—which will prevent the Mississippi River from leaving its course to the Gulf of Mexico by diverting to the Atchafalaya River—a tidewater channel to the gulf from New Orleans, and the comprehensive review report on the entire Mississippi River and tributaries project.

A 1918 graduate of West Point and MIT '21, General Hardin has served as district engineer at New Orleans and, briefly, as director of the Corps's Waterways Experiment Station at Vicksburg. He also was division engineer of the Great Lakes Division and, from 1939 to 1943, held the post of chief of the Rivers and Harbors Section and executive officer in the Construction Division in Washington, D. C. From 1951 to 1953, he was Assistant Chief of Engineers for Military Construction. During World War II, General Hardin served as deputy chief engineer of the U. S. Army in the European Theater of Operations.

An active member of technical societies, he has contributed numerous articles to technical journals, especially the American Society of Civil Engineers and the Society of American Military Engineers.

New Engineering Dean Named for Connecticut

Prof. Harold Torgersen has been appointed dean of the school of engineering at the University of Connecticut. He will take over his new duties this summer, when he leaves his present post as associate dean of the college of engineering at New York University.

Professor Torgersen, who succeeds the late Francis L. Castleman, Jr., formerly served as director of the evening division of the College of Engineering at New York University.

Daniel V. Terrell

Engineering Dean to Retire From Kentucky on July 1

Dean Daniel V. Terrell, 1953-54 president of the American Society of Civil Engineers, will retire effective July 1 as dean of the college of engineering, University of Kentucky, at Lexington.

He will be succeeded by Prof. Robert E. Shaver, head of the school's department of civil engineering.

Head of the college since 1946, Dean Terrell has been with the Kentucky teaching staff since 1912, when he joined the faculty as acting professor of highway engineering (ENR Oct. 15, 1953, p. 23). He has served as consultant to the Kentucky Highway Department for over 20 years and is director of its research work. The retiring dean also is associated with the engineering manpower commission of Engineers' Joint Council.

Kenneth E. Fowler

Fowler Named Engineer For Pipe Association

Kenneth E. Fowler has been appointed division engineer of the Corrugated Metal Pipe Association, and from headquarters in Kansas City will represent the group in Kansas, Missouri, Nebraska and Iowa.

Mr. Fowler, who attended the Universities of Kansas and Oklahoma, served as both a city and county engineer in Kansas and as an engineer on construction jobs in the Midwest.

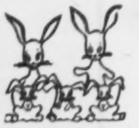
His most recent work has been in the field of pipelines, with emphasis on the problems of corrosion control.

Davidson Named Director Of Corps' Laboratories

Col. Alfred H. Davidson, Jr., is returning from Korea this month to become director of the Corps of Engineers' Engineer Research & Development Laboratories, Fort Belvoir, Va. The position will become effective on departure of the present director, Col. Horace F. Sykes, Jr., who plans to retire from active service.

Colonel Davidson has been serving in Korea as Engineer, Eighth Army. Prior to that job, he was New York District Engineer.

(M&J continued on page 92)



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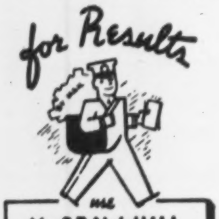

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Careers

Government

Col. John S. Harnett will become District Engineer for San Francisco District, Corps of Engineers, effective this July, replacing **Col. John A. Graf,** who will attend the Industrial College of the Armed Forces. **Lt. Col. Seymour Rubenstein** is appointed executive officer for the same district and will assist in supervising a civil works construction program for the Northern California coastal region.

Lt. Col. Raymond O. Miller is assigned as Assistant District Engineer for the Mobile District, Corps of Engineers. He succeeds **Lt. Col. Robert S. Kramer,** who has been ordered to duty in Spain.

James P. Egan, city engineer for Butte, Mont., resigns to become an engineer in the public works office of the Marine Corps Supply Center at Barstow, Calif.

Col. James U. Moorhead will become Assistant Chief of Engineers for Real Estate, Department of the Army, effective this August, replacing **Col. W. W. Ragland** who will be assigned to U. S. Army Europe. Colonel Moorhead now is assigned to Army Forces Far East and has been District Engineer in Miami and Portland, Ore.

James Turner is made acting general manager and chief engineer of the San Francisco municipal water department—the appointment to become permanent July 1 – replacing **George W. Pracy,** who retired April 1 (ENR April 11, p. 97). A University of California graduate, Mr. Turner was manager of the Hetch Hetchy division before he moved into the position he is now about to leave, boss of the city's five utility divisions.

Four shifts in division engineers have been announced by the Ohio Highway Department. **William E. Quicksall** becomes Division 11 engineer; **Dewey Akerman** is Division 8 engineer; **C. R. Hanes** is first assistant engineer of construction for the Department; and **William R. Hauserman** is engineer for Division 3.

George M. Shepard, chief engineer of the Department of Public Works, St. Paul, Minn., since 1922, has been appointed to the new position of Street and Highway Engineering Coordinator. **Arthur W. Tews** has been named chief engineer in the department.

Business

Ford J. Twaits and **Carl H. Wittenberg,** contractors and engineers of Los Angeles, have announced their partnership, to be conducted under the new firm name of Twaits-Wittenberg Co.

William K. Taylor, a soils specialist who did work on soil and sub-grade studies for the Ohio Turnpike and the Indiana Turnpike has joined the firm of Benjamin E. Beavin Co., Baltimore consulting engineers.

Henry Seitz, formerly designing engineer of bridges and buildings, has been named structural engineer for the Baltimore & Ohio Railroad.

George C. Gordon, who had been acting executive director of the Regional Planning Commission of Greater Harrisburg, has joined the Harrisburg engineering firm of Erdman, Anthony & Hosely, Inc.

Ralph Birchard, former chief of specifications, estimates and reports branch of the Air Force Acedemy Construction Agency has joined the staff of Radar and Associates, engineers and architects of Miami, Fla.

R. L. Groover of Wilmington, N. C., has been named assistant general manager of the Atlantic Coast Line Railway and the Charleston & Western Railway. He has been a member of the ACL engineering staff since 1914.

Claude F. Horton has been named executive vice president and director of Construcciones Collins de Venezuela. A Massachuesetts Institute of Technology graduate, Mr. Horton was formerly a vice president of Brown & Root, Inc., in charge of pipeline work.

Francis H. Falkner, retired Corps of Engineers colonel, is appointed chief engineer of the Los Angeles office of Porter, Urquhart, McCreary & O'Brien, consulting engineers, where he will devote much of his time to military construction and water resource development.

Bart D. Williams, since 1947 assistant erection manager for the Birmingham Erection District of the Chicago Bridge & Iron Co., with headquarters in Birmingham, Ala., has been named district manager. Mr. Williams is a civil engineer and a graduate of the University of Illinois.

Robert M. Phelps, who joined the Chicago Bridge & Iron erection department in 1945, has been named manager of the Pacific Coast Erection District, with headquarters in Torrance, Calif. Mr. Phelps is a civil engineer and graduate of Oregon State College.

Dan C. Kline and **George R. Carter** have been appointed erection managers in the American Bridge Division, U. S. Steel Corp. Mr. Kline will be stationed in the Roanoke, Va., office and Mr. Carter in the Chicago office.

Henry W. Smith, assistant chief engineer of B. C. Electric Co.'s engineering division, is appointed assistant general manager of the company's subsidiary firm, B. C. Engineering.

Honors

James A. Brennan, senior civil engineer with the New York State Department of Public Works and a veteran of 52 years with the department, was honored at the annual dinner of the New York State Association of Highway Engineers in Watertown, N. Y. Brennan, who plans to retire next fall, is a member of the New York Society of Professional Engineers and the New York State Association of Highway Engineers.

Walter H. Zinn, former director of Argonne National Laboratory, Lemont, Ill., received the American Power Conference's Certificate of Merit Mar. 27 in recognition of his contribution in the field of nuclear power generation and pioneering achievements in atomic research. Mr. Zinn, now president of General Nuclear Engineering Corp., is the second recipient of the award during the 19 year history of the Conference.

Retirements

Ernest H. Stork, a Columbus, Ohio, city engineering employee for 41 years, retired April 1 as City Planning Director.

Elbert C. Brown, district engineer for the Federal Bureau of Public Roads at Sacramento, retired March 31, winding up a 48-year career in federal service, of which 38 were with the Bureau of Public Roads.

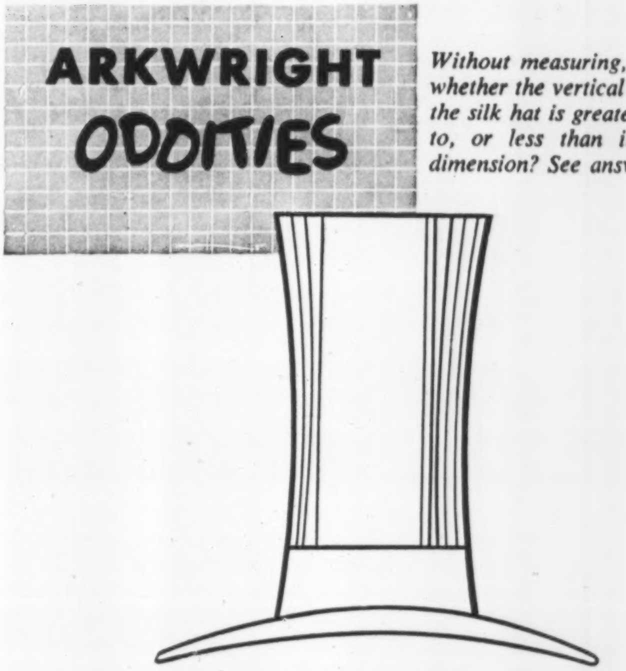
L. C. Bishop has retired after 18 years as Wyoming state engineer.

H. B. Christianson retired April 5 after 40 years in the engineering department of the Chicago, Milwaukee, St. Paul & Pacific Railroad Co. He received his civil engineering degree from the University of Minnesota in 1915 and served for several years as division engineer in Iowa and other mid-western states.

William G. Weber, head of the large gates and valves section of the Bureau of Reclamation's mechanical branch at Denver, retired Mar. 31 after 30 years of service with the Bureau. An authority in the design of large gates and valves, he designed the 50x50 ft bulkhead gates and the 32 ft dia gates for Hoover Dam.

L. C. Anderson, vice president and general manager of Nashville Bridge Co., has retired after more than 30 years' service. **Col. Gilbert N. Dorland** has been named to succeed Mr. Anderson.

Gurney H. Dayett, Sr., formerly assistant to the chief engineer, and John S. Knight, regional engineer at Chicago have retired after long service with the Baltimore & Ohio Railroad.



Without measuring, can you tell whether the vertical dimension of the silk hat is greater than, equal to, or less than its horizontal dimension? See answer below.

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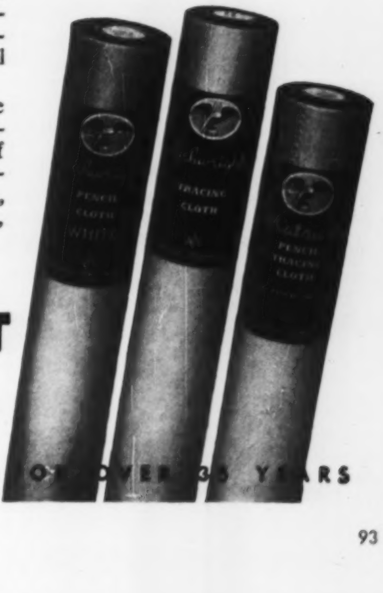

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Obituaries

John V. Boland, Sr., 84, founder of John V. Boland Construction Co. of St. Louis, died in St. Louis on Feb. 23. He entered the construction field as an industrial contractor and specialized in municipal and utility power-plant construction, boiler settings and chimney construction.

George C. Murphy, 67, home builder and realtor, died Mar. 12 in Louisville, Ky. Mr. Murphy, trained as an architect and electrical engineer, retired 10 years ago as head of Murphy Elevator Co., which he helped found. Before founding that company, he was with American Elevator & Machine Co. for 20 years, 10 as sales manager.

J. Upton Gribben, 84, architect, died Mar. 18 in Columbus, Ohio. Mr. Gribben designed many of the church buildings that were erected in Columbus during the first quarter of the century. He was consulting architect for the 555 ft American Insurance Union office building—now known as the LeVeque-Lincoln tower—when it was built in Columbus in 1927.

Theodore Koch, 72, architect, died in Staten Island, N. Y., Mar. 23. Except for a period between 1935 and 1936 when he worked with the U. S. Bureau of Biological Survey in North Dakota and Washington, Mr. Koch spent the greater part of his career with the architectural firm of McKim, Mead & White. He was with that firm from 1920 until 1944 and was supervising architect for Bellevue Hospital's Administration Building, the Savoy-Plaza Hotel and Girard Trust Co. in Philadelphia.

Hilles C. Bolon, 50, project engineer for the Mound St. Interchange of the Columbus, Ohio, expressway program, died Mar. 23. He was a federal ordnance employee before entering the city engineering post more than a year ago.

Russell A. Myers, 60, for three terms Vigo County, Ind., engineer, and more recently superintendent of Wabash Valley Asphalt Co., Terre Haute, died Mar. 17. He was a graduate of Purdue University.

Howard Chapman, 82, retired New York architect, died April 8 in Noroton, Conn. Mr. Chapman headed his own firm for many years. He was a graduate of Columbia College, class of 1899, and also attended the Ecole des Beaux Arts in Paris.

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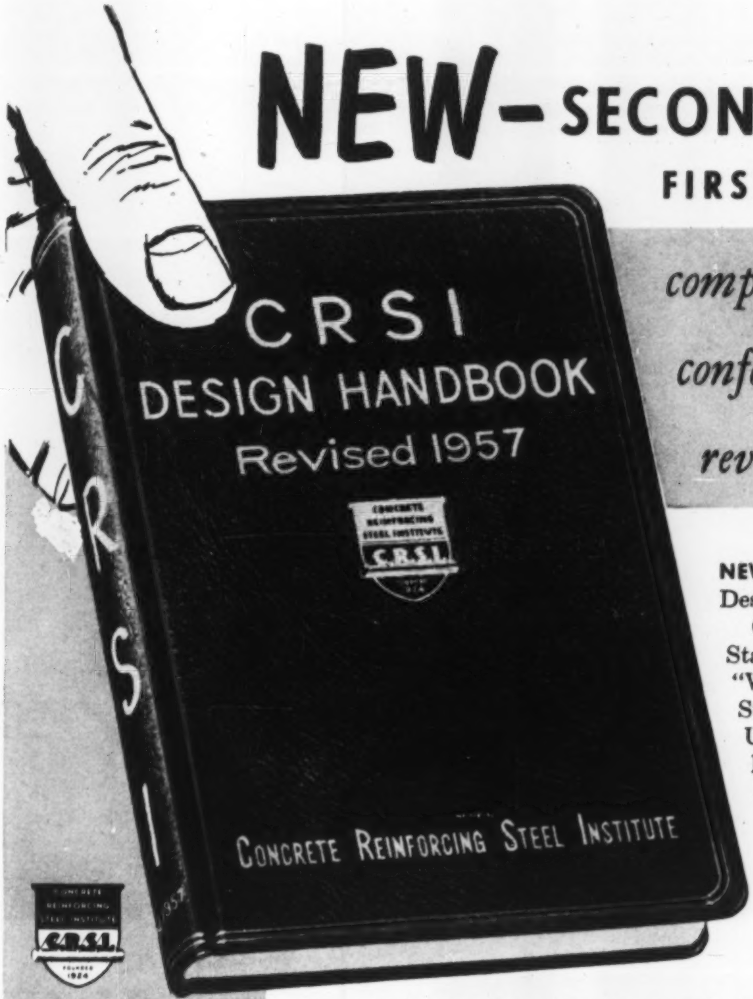

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better! It is more flexible, stronger and faster than ever! Inherent frame design features allow the greatest amount of flexibility—*even as much as 12 to 25 feet in one machine!* And, there is a complete line of FLEX-PLANES to cover any width range desired. Only FLEX-PLANE self-widening offers independent control of extension frames, which means both sides of the machine can be extended or retracted together—*or individually,* for the negotiation of complicated interchange patterns involving variable width and short radius super elevated curves. But, more important, it is the only really proved self-widening machine available today. More than 60 units operating throughout the nation attest to this.

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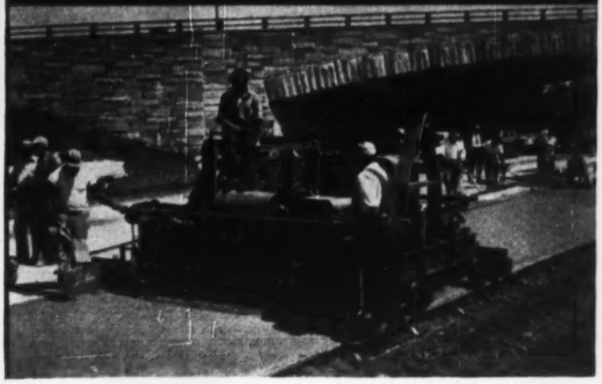

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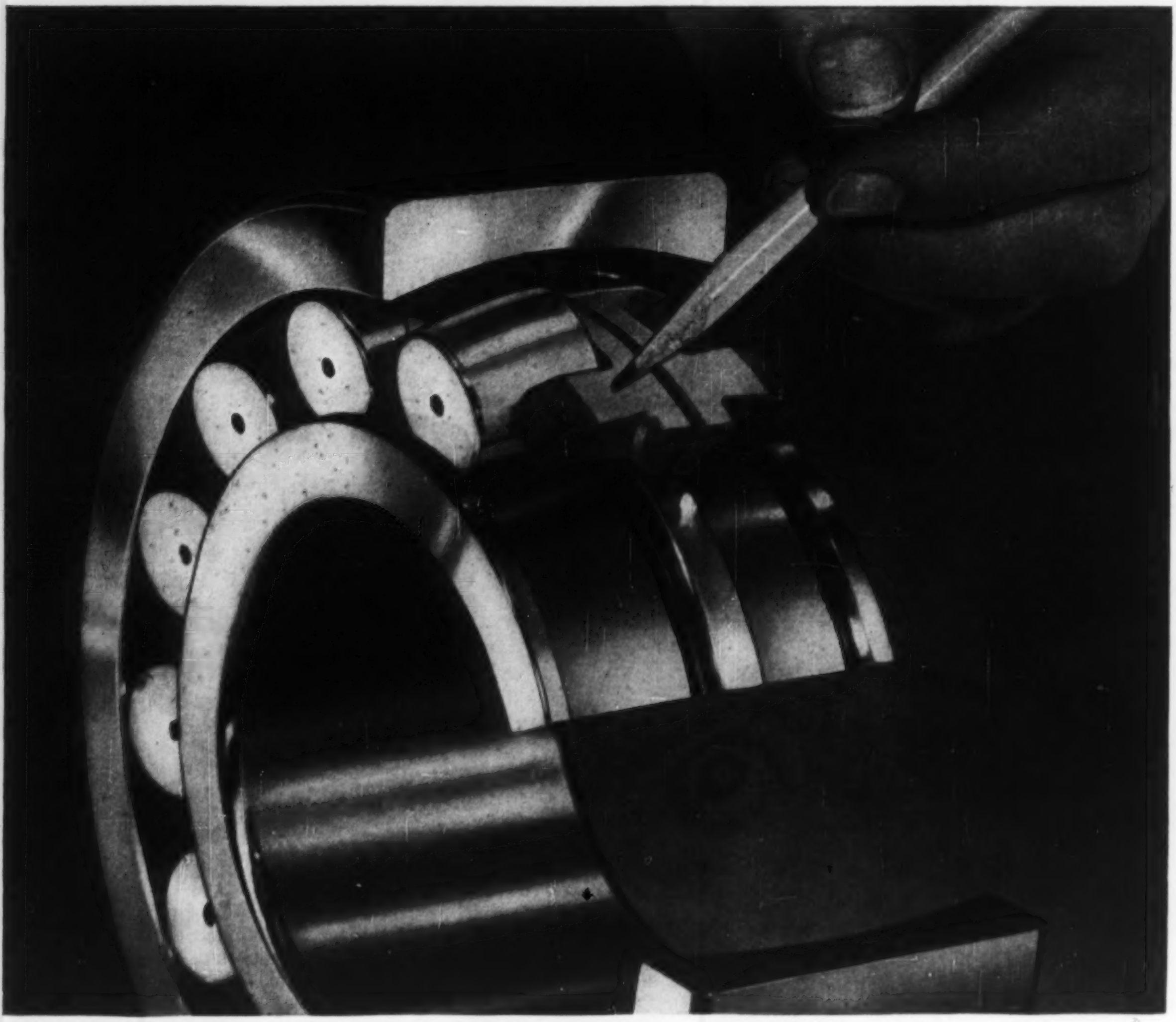

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Contractor Is Held Bound By Vague Delivery Dates

It is not within the province of a court to grant relief to a contractor from a poor bargain to which he has committed himself.

In a New York case the contractor's dilemma was a price squeeze that flowed from the contract's failure to set a time limit on performance under the contract. The facts were these:

A subcontractor submitted a bid to the general contractor to deliver steel and pipe railings. The general contractor prepared and signed a purchase order and sent it to the subcontractor who signed it and returned it to the general contractor. As signed by both parties, the order provided that the date for delivery or starting work was "when and required."

The general contractor did not furnish the subcontractor with working drawings until about a year after the contract was signed, at which time the general contractor asked for prompt delivery of the material covered by the order. The subcontractor refused to furnish the material unless he was paid a higher price, contending he was justified in doing so because of the delay of the general contractor in furnishing the working drawings. He was unable, he said, to acquire the needed material and, as a result of strikes and other conditions, steel was relatively scarce and high in price—conditions that were created by the general contractor. The general contractor refused to increase the price set forth in the contract and, upon the refusal of the subcontractor to furnish the material, bought it from another firm at an increased price. He then brought an action against the subcontractor and his surety to recover the difference in cost.

Upon the above facts, the general contractor applied to the court for a summary judgment, which the court granted. The court held that the only issue involved was the actual amount of damage.[1]

In explaining its decision, the court said: "The only possible conclusion is that the subcontractor gambled on his being able to acquire and supply at a profit the material 'when and as required' by the contractor, presumably as needed by it in the general progress of the construction job. He made no attempt to protect himself by setting a time limit for the submission of the drawings or against a rise in the price of steel during the period necessarily intervening before plaintiff (general contractor) might require delivery.

"The courts cannot make contracts for parties but are limited to carrying out those which they themselves have voluntarily made, however improvident they turn out to be. There being no showing of bad faith with regard to the time when plaintiff 'required' delivery, no reason exists for refusing to hold the subcontractor to his bargain."

(1) Terry Contracting, Inc. v. Commercial Insurance Co., 156 N.Y.S. 2d 285, Supreme Court, New York County, N. Y., Sept. 12, 1956.

Loss of Rent Recovered For Delayed Performance

Loss of rents may be included as an item of damages in the amount an owner may recover from a contractor for delayed performance.

In one case, for example, a building contractor sought to recover the balance due under a contract. The owner counterclaimed for the sum he had paid another contractor to complete the work, and, in addition, the loss of rental resulting from delayed performance of the work. The owner obtained a judgment at the trial on his counterclaim and the judgment was affirmed on appeal.[1]

The case stemmed from a contract for construction of a building, which was to be completed and ready for occupancy by May 1, 1951. The contractor had knowledge of the fact that the owner had entered into a ten year lease of the building, said lease to start on May 1, 1951, the date of completion set forth in the contract. The construction contract contained no provision for liquidated damages for delayed performance nor any specific penalty for the failure to complete the building by May 1, 1951.

In April, 1951, certain changes were made in the specifications covering the interior painting work. In July, the architect informed the owner that the painting job did not comply with the specifications and the owner thereafter entered into an agreement with the contractor to repaint the defective part of the work and the owner agreed to pay the contractor the additional sum of $350. The owner also agreed to waive any claim for damages for delayed performance if the contractor completed the job and the same could be occupied by the tenant by July 13, 1951. The contractor did not complete the work by July 13, 1951, and the owner and tenant entered into an agreement whereby the tenant would take possession of the building on July 16, 1951, and would employ another contractor to complete the work and the owner would reimburse the tenant for the expense so incurred.

The counterclaim interposed by the owner was for the sum of $3,000 paid to the tenant as the cost of completing the work and for loss of rent from May 1, 1951, the date for completion set forth in the contract. The contractor claimed that the owner had waived his right to damages for delayed performance. The court held that the waiver was conditioned on the contractor completing the work by July 13, 1951, and as this condition had not been complied with, the owner did not waive the right to recover damages for delayed performance.

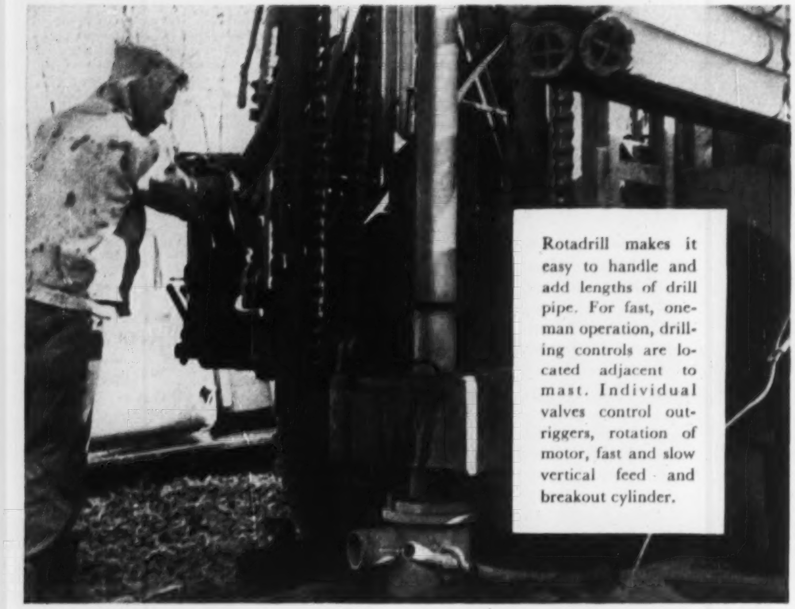
(1) Lidral v. Sixth and Battery Corp., 290 P. 2d 459.

No Contract Revocation After Bid Is Accepted

A number of cases have arisen over the question of whether a municipality, after awarding a contract to the lowest bidder, can rescind the contract and give it to the second lowest bidder. The answer is generally "no." The legal reasoning is explained in this case.

The city council of a municipality had passed a resolution declaring a contractor the lowest bidder and awarding him the contract. Thereafter, the resolution was rescinded and the contract was awarded to the second lowest bidder. The contractor who had submitted the lowest bid and to whom the contract was originally awarded, instituted an action to determine the validity of the resolution passed by the council rescinding the resolution awarding the contract to him. The trial court held that the council had the right to rescind the resolution awarding the contract to the lowest bidder, but this determination was reversed by the appellate court,[1] which held that once the contract had been awarded, the council had no right to rescind such action.

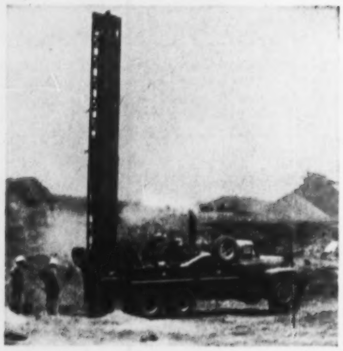
The appellate court stated: "It has long been decided in this and other states and in the courts of the United States that in the letting of contracts for the doing of public works where the legislative body or the administrative officer is required by statute to call for bids and must under competitive bidding conditions let the contract to the lowest responsible bidder, the making of the award gives rise to a contract between the public body or agent and the successful bidder. (Citing many authorities). In 10 McQuillin on Mu-



Rotadrill makes it easy to handle and add lengths of drill pipe. For fast, one-man operation, drilling controls are located adjacent to mast. Individual valves control outriggers, rotation of motor, fast and slow vertical feed and breakout cylinder.

FIELD TESTS PROVE:

One man can add drill pipe in 5 minutes



Fast drilling is indicated by heavy dust coming from primary dust collector and very fine dust blowing from stack. Note position of Truck Mounted Rotadrill—right at edge of excavation. You can drive this unit right to the job—even in locations where bigger rigs can't go.

Heavy structural steel mast, raised and lowered hydraulically, travels safely between jobs on crotch. Set-up is simplicity itself; the operator simply lowers outriggers, raises mast and attaches drill pipe and bit.

Actually, adding to the drill string takes *less* than five minutes with the Schramm Truck Mounted Rotadrill. One man does the job without delay or danger.

Big reason is that controls for breaking pipe joints are located near the mast—along with controls for starting, stopping, rotation, down pressure and rapid traverse. Also, there's no rotating table or Kelly bar. Fast vertical action of rotative head serves as pipe hoist for adding pipe or pulling drill string. Slip holders open easily for setting of casing and enough pipe is carried on the rig to drill a well.

Truck Mounted Rotadrill sets up for work in minutes—makes hole faster than any other type of drill rig. Rotary air drilling, with the Schramm Rotadrill, means 600% to 700% faster penetration. Because compressed air continuously cleans the hole, the drill bit works on new rock instead of regrinding chips.

With 26,000 pounds down pressure, the Rotadrill can drill a 6¼″ hole with 4½″ O.D. pipe to a depth of 700 feet. Under certain conditions, larger holes can be drilled with a 4½″ O.D. pipe. With a smaller drill pipe, smaller holes can be drilled to 1500 feet.

Full cost-cutting details of Schramm Truck Mounted Rotadrill are yours without obligation. Write for Bulletin TMR-55 and ask for "Rotary Rock Drilling with Schramm Air Compressors."

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nicipal Corporations, third edition (1950), section 29.71, page 343, the rule is accurately stated, thus: 'While it is true that a municipal corporation has discretion as to the time and manner of making corporate improvements and the purchase of supplies, still when this discretion has been exercised and a contract made relative thereto, the legislative function has been exhausted, and the duty has become purely ministerial, and a contract so made cannot be impaired at the option of the municipality. Hence, when a bid has been accepted by the proper authorities, such acceptance cannot be revoked.' "

(1) City of Susanville v. Lee C. Hess Company, 290 P. 2d 520.

Contract May Specify Extra Work Procedure

A contractor may lose his right to compensation for extra work by his failure to follow the procedural requirements imposed by the contract. The right was lost in the following case, which was filed by a subcontractor against the general contractor. The prime contractor had refused to pay for extra work on the ground that the subcontractor has not complied with the formalities of the contract.

The prime contract contained the following provision: "If the contractor claims that any instructions by drawings or otherwise involve extra cost or extension of time, he shall, within 10 days after the receipt of such instructions, and in any event before proceeding to execute the work, submit his protest thereto in writing to the Contracting Officer, stating clearly and in detail the basis of the objections. No such claim shall be valid unless so made."

The subcontractor obtained a judgment at the trial, but this judgment was reversed on appeal and the action dismissed on the ground that the subcontractor had not complied with the contract requirement entitling him to payment for extra work.[1] The appellate court stated: "A provision similar to the one here is frequently found in construction contracts, and it has been uniformly held that such provision is valid, as a consequence of which, in the absence of conduct operating as a waiver or giving rise to an estoppel, failure to make a claim for extra work in the manner and within the time specified precludes recovery therefor."

(1) Enochs v. Christie, 291 P. 2d 200.

These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.

Books

Data on Plastics

Technical Data on Plastics—Manufacturing Chemists' Association, Inc., 1625 Eye St., N.W., Washington, D. C. 224 pp. $3.25.

The revised 5th edition of an industry handbook describes and catalogs properties of all commercially available plastics.

The handbook lists graphical and tabular data on fabrication, durability, electrical, mechanical and miscellaneous properties of 25 types of plastics.

Also contained in the book for the first time is a chapter by Prof. A. G. H. Dietz of Massachusetts Institute of technology entitled, "Designing Plastics for Strength."

The handbook is expected to be in great demand because of the expanding markets for plastics, particularly in the construction industry where such technical data are needed by regulatory officials, engineers and architects.

Miscellaneous Notes

- **Plain vs grooved nails**—VPI Wood Research Laboratory reports the results of comparative tests performed on plain-shanked, fluted and threaded nails. These tests were run immediately after driving and after exposure periods that simulated accelerated service conditions. Test data showed that the fluted and threaded shanks provide an average effectiveness of 4.9 times that of the plain-shanked nails. The 24 page booklet is available from the Virginia Polytechnic Institute Wood Research Laboratory, Blacksburg, Va.

- **For Surveyors**—The fifth edition (204 pages) of Review Questions for Surveyors, published by R. C. Brinker, Box 153, Blacksburg, Va., is now available. In addition to up-dating all reference material included in earlier editions, the fifth edition contains sample registration examinations from 10 states. Price $3.50, single copy; $3.00 per copy on orders of five or more.

- **Tidal Hydraulics**—Revised edition of "Tidal Hydraulics" has been completed since the death of its author, the late Brig. Gen. G. B. Pillsbury. This paper is intended to develop the nature of those variations of the tides and tidal currents that are of interest to engineers engaged in harbor development. A method for computing the currents and tides to be expected in a proposed navigation channel is presented. The treatment of the tides and tidal datum planes in the first four chapters is drawn from the manual issued by the U. S. Coast and Geodetic Survey, and from Harris' Manual of Tides. A method for computing the currents and tides in a proposed tidal channel from the constants commonly applied to steady flow, but with the effect of acceleration and deceleration of the tidal current included, is given in chapters V and VI. The tidal flow in estuaries, bays, and other natural tidal waters is discussed in chapters VII to X. Copies may be obtained from the Waterways Experiment Station, P. O. Box 631, Vicksburg, Miss., for $2.50 each.

- **Ohio River Data**—First installment of a "diary' 'that reveals the varying moods of the Ohio River in terms of water quality and flow changes has been published by the Ohio River Valley Water Sanitation Commission. It is a recording of four years of continuous chemical and bacteriological analyses from a network of 43 monitor stations. The publication also includes a hydrographic study of the flow variability pattern of the Ohio River, particularly with regard to the occurrence of minimum flows. Orsanco believes this compilation of basic data is vital in providing facts from which it can diagnose changing conditions and check compliances with clean-stream regulations.

  Starting with eleven stations in 1951, the Commission has now augmented its monitor network to secure data from 43 locations on the Ohio River and many of its tributaries. Fifteen of the stations are operated through the aid of public, private and industrial water purveyors. The other stations are serviced under a cooperative contract with the U. S. Geological Survey and Corps of Engineers. Copies of the 112 page report, titled "Water Quality and Flow Variations in the Ohio River," are available for $2 from Orsanco headquarters, 414 Walnut St., Cincinnati 2, Ohio.

- **"Evaluation of Highway Bridges"** reports the results of a study of methods for evaluating the load-carrying capacity of existing bridges. The results are presented in three parts; an introductory discussion of the fundamental considerations involved, a review of practices in rating bridges in various parts of the world, and a series of recommendations that could be used as a basis for a specification. Copies may be obtained from the Ontario Joint Research Programme, Queen's University, Kingston, Ont. Also available is a supplement to the above report "Proposed Specifications for the Rating of Existing Bridges".

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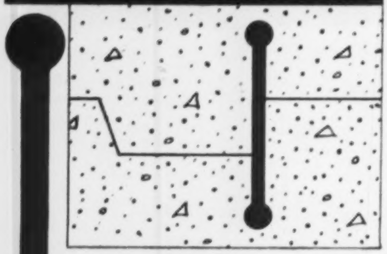

Williams Efficiency Waterstops are made from Natural Rubber Stock, and designed for maximum effectiveness in any type of cast-in-place construction joint. They will bend around corners—will not tear from shear action. Tensile Test: 3990 lbs.; Elongation Test: 650%. Available in rolls up to 80 feet in length. Field splicing is simple. Williams Waterstops can also be furnished in Neoprene for industrial uses where resistance to oil and other injurious wastes is desirable. These highly effective Waterstops are now in use in hundreds of industrial plants, commercial and public buildings throughout the country.

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Unit Prices

Swing Truss Bridge in Swampy Area, Louisiana

The $625,285 Bayou Lacassine Bridge includes one 204 ft steel truss swing span and fifteen 40 ft I-beam spans to carry a 24 ft roadway. It is located on Hayes-Lake Arthur Highway in Jefferson Davis Parish, La., where it will replace an obsolete creosoted timber pile bridge with a 70 ft steel center span constructed in 1926.

Work is for the Louisiana Department of Highways in Baton Rouge. T. T. Chenet, Welch, La., is project engineer and C. C. Bernard, Baton Rouge, is project control engineer.

The successful bid from T. L. James & Co., Inc., Ruston, La., is 7.3% above the engineer's estimate and only 0.5% below the nearest competitor.

Swampy grounds at the site require considerable demucking and the hauling of material for the embankment.

Bituminous roadway pavement on the approaches will be placed on a 16 in. lime soil base course. No bids were received on the alternate for a combined clam and reef shell and soil lime base course with bituminous primer.

Class A concrete must contain six bags of cement per cu yd, class D concrete five bags and class S concrete calls for seven bags of cement.

The six bidders include:

1C	T. L. James & Co., Inc., Ruston, La	$625,285
2	H. L. Allen & Sons, Elton, La	628,510
6	Kansas City Bridge Co., Plaquemine, La	836,091
EE	T. T. Chenet, Welsh, La	582,603

Bids: 1-30-57 Items	Unit	Quantity	Unit Prices 1C	 2
Exc, common	cy	26,904	$0.38	$0.45
drainage	cy	9,757	0.40	0.55
muck	cy	52,346	0.35	0.65
special borrow	cy	100,605	0.70	0.75
structural	cy	771.52	14.00	20.00
Watering	Mgal	87	3.00	3.00
Seeding	lb	261	3.00	3.00
Fertilizing, common, 8-8-8	lb	7,000	0.10	0.06
Base crse, clam & reef shell	cy	6,202	....	....
soil lime, 12% lime by vol				
6"	sy	14,940.1	....	....
8", alternate	sy	15,388.1	1.00	1.10
8", alternate	sy	9,900.8	1.00	1.10
Surf crse, clam & reef shell	cy	601	4.00	5.00
Bituminous primer	gal	2,365	....	....
Asphalt cement	gal	8,108	0.20	0.20
Aggregate, coarse, size 1	cy	180	6.50	9.23
fine, size 2	cy	100	6.50	9.23
seal, size 3	cy	68	6.50	9.23
Concrete, class A	cy	751.08	78.00	70.00
class D	cy	99.35	52.00	70.00
class S	cy	152.46	57.50	50.00
Steel, reinf, deformed	lb	109,026	0.153	0.15
fabric, carbon	lb	379,296	0.314	0.27
silicon	lb	213,035	0.28	0.27
Timber, treated	Mfbm	20.495	500.00	550.00
RCCP, SS, 24"	lf	204	6.00	6.50
36"	lf	228	10.00	10.00
Piles, precast conc, 14"	lf	2,050	7.00	8.50
16"	lf	1,280	8.40	10.00
18"	lf	720	11.40	14.00
timber, treated	lf	10,215	2.30	2.50
cip conc, 16"	lf	1,620	10.75	12.50
jetting	ea	86	1.25	free
Test piles, conc, unloaded	ea	5	1,125	2,000
cip conc, unld	ea	1	1,875	2,000
loading	ea	6	625.00	300.00
Bridge machinery, movable	ls	job	43,500	36,000
flooring, open grid	sf	4,924	8.00	6.70
Approach slabs, conc	sy	108.16	10.00	10.00
Fence, barbed wire, new	sta	14.35	25.00	25.00
Single gate, swinging, driveway	ea	1	60.00	45.00
Markers, ROW, conc posts	ea	22	6.00	6.00
Signs and barricades	ls	job	1,000	2,500
Gates, traffic barrier	ls	job	1,000	2,500
Clear & grub	ls	job	7,500	2,000
Detour temp emb & surf	lf	500	4.00	5.00
Salvaged matl, haul	ls	job	2,000	2,000
Access road	lf	499	5.00	5.50
Remove bridges	ls	job	10,100	5,050
Rem & reloc bldgs & misc structures	ls	job	400.00	900.00
Move bldgs & misc structures	ls	job	free	free

Time to complete: 300 calendar days
Liquidated damages: Amount of construction engineering

Illinois Water Sytem Draws Twelve Bidders

Water line extensions with 6,040 lin ft cast iron pipe and 116 service connections will supply water to a newly developed part of Altamont, Effingham County, Ill. This city of 1,580 population operates its own water plant and power station. Mayor Frank A. Bauer is president of the Board of Local Improvements. Russell, Axon & Associates of St. Louis, Mo., are consulting engineers.

The $21,779 contract drew 12 bids. It went to W. L. Hall, Contractor, Atwood, Ill., at a bargain price 20% below the engineer's estimate but only 1% below the second low bid.

Bids on the time to complete the job ranged from 60 to 180 calendar days. The contractor bid 60 days.

Class 150 cast iron pipe, 4 in. and 6 in. in diameter, must conform with ASTM standards A21.2, A21.6 or A21.8.

Scheduled wage rates are $3.00 for skilled labor, $2.50 for semi-skilled and $2.00 for common labor.

Bidders include.

1C	W. L. Hall, Atwood, Ill	$21,779
2	C. A. McNeely, Vandalia, Ill	22,000
12	Carbar Construction Co., St. Louis, Mo	32,952
EE	Russell, Axon, & Assoc., St. Louis, Mo	27,228

Bids: 1-14-57 Items	Unit	Quantity	Unit Prices 1C	 2
Water Line Extensions				
CIP, 6", f&i	lf	2,230	$2.53	$2.85
4", f&i	lf	3,810	1.90	1.95
Specials, CI, f&i	lb	3,150	0.30	0.28
Gate valve & box, 6", f&i	ea	2	81.50	86.15
4", f&i	ea	10	63.00	65.50
Fire hydrant w/2 hose nozzles, 2 1/2" & line connect,				
6", f&i	ea	1	150.00	135.74
4", f&i	ea	6	135.00	136.90
& 1 pumper nozzle, 4 1/2" & line conn, 6"	ea	1	180.00	150.40
Pavement, concrete, replace	sy	10	4.00	14.00
asphalt, replace	sy	35	2.00	10.00
Cut-in conn to exist water main, construct	ea	8	50.00	106.00
Subtotal		$16,269		$17,940
Service Connections				
Service connections, f&i	ea	116	47.50	35.00
Deduct or add per ft if serv conn is more or less than 25 ft	lf	....	1.10	1.15
Subtotal		$5,510		$4,060

Time to complete: 60 calendar days
Liquidated damages: $25.00 per day

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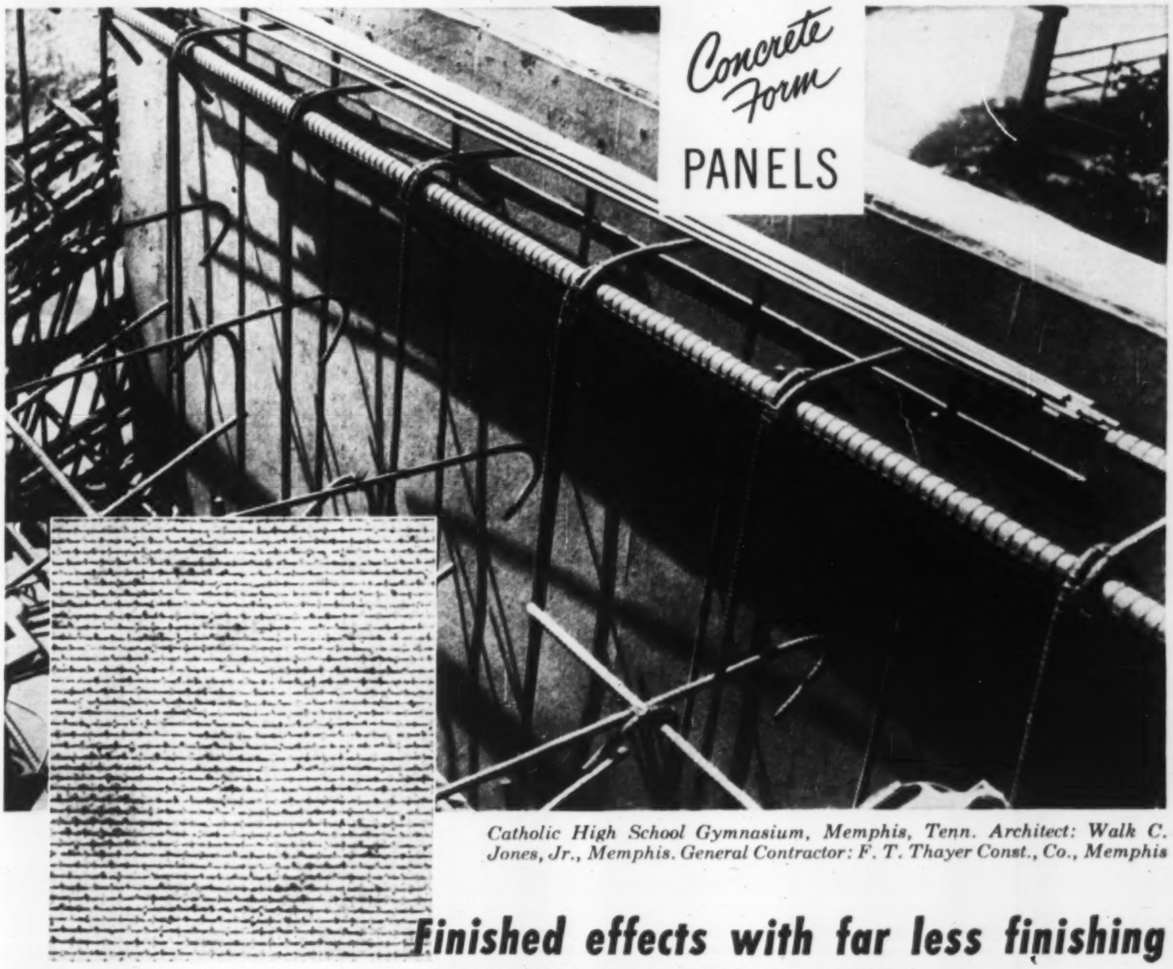

Catholic High School Gymnasium, Memphis, Tenn. Architect: Walk C. Jones, Jr., Memphis. General Contractor: F. T. Thayer Const., Co., Memphis

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Address..........
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Zone.... *County*..........

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES

- Cement, Aggregate, Ready-mixed Concrete, Asphalt: Last, Apr 4; Next May 9
- Iron and Steel Products, Pipe: Last, Aor 11; May 16
- Wood Products, Glass, Explosives, Chemicals: Last, Apr 18; Next, May 23
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Aor 25; Next, May 30

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	STRUCTURAL CLAY TILE PARTITION — SCORED Per M. lots of 2,000 pieces or over,			STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over,			BRICK Per M. in quantity		LIME Per ton, in paper, Carload lot,		
	3x12x12 in.	4x12x12 in.	8x12x12 in.	8x12x12 in.	10x12x12 in.	12x12x12 in.	Common backing	Straight hard	Hydrated finishing	Common hydrated	Pulverized or lump
Atlanta	$149.90p	$149.90p	$299.80p	$334.55p	......	......	$30.50p	$32.70p	$23.50	$24.50	$.....
Baltimore	203.00	217.00	406.00	485.50	596.00	681.00	36.00k	41.00k	33.00	22.00	.....
Birmingham	135.00p	152.00p	......	303.00p	376.00p	465.00p	27.00ff	38.00gg	35.02	22.30	26.33
Boston	217.00†	231.00†	434.00†	520.50†	......	......	41.50p	46.50p	39.20†	31.20†	.....
Chicago	135.00	145.00	280.00	......	......	......	30.00	32.00	38.00	35.20o	.....
Cincinnati	205.00j	225.00j	295.00jdd	213.00j	288.00j	314.00j	45.75j	47.00j	30.04j	26.04i	30.04j
Cleveland	209.00	223.00	......	......	......	......	43.00	47.00	31.00	26.00	.....
Dallas	152.00	152.00	277.50	337.50	414.75	513.50	25.75	45.00	37.86	25.08	.....
Denver	......	......	......	......	......	......	36.00	47.50	34.80bb	28.00bb	34.00bb
Detroit	253.00	275.00	506.00	......	616.00	704.00	44.00p	44.50p	38.00	30.00	.....
Kansas City	127.50	147.50	270.00	270.00	340.00	400.00	33.00	33.00	40.00	38.00	34.00
Los Angeles	r	r	r	r	r	r	30.50§	.....	34.00	34.00	35.00
Minneapolis	188.00p	210.00p	429.00p	210.00pw	......	......	43.00*p	52.50ii	45.50bbe	35.50bbe	47.50bbde
Montreal	170.00aq	178.00au	325.00au	270.00	400.00	......	42.00	49.00	39.00	22.00	13.25u
New Orleans	186.00	186.00	380.00	380.00	......	......	40.00	55.00	44.00	32.00	32.00
New York	158.10h	168.60h	231.70ch	233.90hn	......	......	44.00	.....	37.00	35.00	.....
Philadelphia	156.30	166.80	312.70	375.20	......	......	30/34	34/40	27.60	25.60	3.17m
Pittsburgh	154.00	162.00	292.00	340.00	420.00	495.00	.....	.....	.....	.....	.....
St. Louis	179.00p	203.00p	358.00p	500.00p	......	......	43.00sl	41.50s	0.95saa	.80saa	1.35sz
San Francisco	156.85*	177.10*	235.30dd*	......	......	......	42.50*	42.50*	27.75	27.75	30.50i
Seattle	225.00p	250.00p	450.00p	250.00pw	......	......	43.00s	57.00s	52.00sbb	40.00bb	4.50mbb
Toronto	138.70	148.70	273.75	222.00f	......	......	25.00	63.00	36.00	33.50	31.00

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	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl.	WHITE LEAD Per 100 lb. in 100 lb. cases	READY-MIXED PAINT Per gal., drums			ROOFING SUPPLIES; Carload lots f.o.b. factory				
	Dry a	In oil w	Graphite b	Aluminum c	Ferric Oxide d	Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$19.25	$28.275	$3.59	$3.86	$3.31	$3.39	$2.20	$2.62	$0.67	$57.75
Baltimore	19.00	27.90	2.75	4.25	3.35	2.78	4.25	4.25	.48	50.18
Birmingham	19.25	28.275	3.90	3.40	....	3.31	2.51ii	2.51ii	.87ff	48.00ee
Boston	19.00	27.90	....	....	....	3.20gq	2.83og	2.83og	.50g	56.00g
Chicago	19.00	27.90	....	....	....	3.45‡u	2.86‡o	2.89‡o	45.50‡bbv	55.70‡
Cincinnati	19.00	27.90	....	....	....	2.92	2.50	2.53	.618y	53.96
Cleveland	19.00	27.90	2.3829pgg	2.5895gg	2.8292gg	3.30q	2.54o	2.54o	.454y	47.00gg
Dallas	19.25	28.65	....	3.13B	....	3.00u	5.00o	3.00o	.464	65.00hh
Denver	19.50	28.40	3.29	5.15	3.04	3.11	2.30o	2.45o	.48ff	47.00
Detroit	19.00	27.90	3.35	3.25	2.80	3.30	2.54f	2.409f	.58‡ff	47.30
Kansas City	19.00	28.65	3.82	3.28	2.90	4.46ii	4.27o	4.27o	.71y	95.70
Los Angeles	19.00	28.15	3.30n	4.50n	4.20n	3.20n	2.15en	l	.70ny	l
Minneapolis	19.00	29.88/28.02	....	....	....	2.99dd	2.41hidd	2.41hidd	.442idd	48.00r
Montreal	......	21.95	5.02Dfft	5.94Efft	4.65Ffft	5.40	4.65f	4.65f	1.60	....
New Orleans	......	......	....	....	....	2.74	2.18	2.43	0.689	....
New York	19.00	27.90	....	....	....	3.15	2.43o	2.43o	.444s	48.00*
Philadelphia	19.00	27.90	3.60	3.40/3.65	3.50/4.60	2.75/3.00	2.94	2.94	.45	48.00
Pittsburgh	19.00	27.90	3.10	3.36	3.68	3.72	2.85o	2.85o	.42	58.75
St. Louis	19.00	27.90	....	....	....	3.70iis	3.95h	3.95h	.46y	54.54
San Francisco	19.00	28.15	3.05	4.25	3.50	2.69	2.09aa	3.10	.47jj	54.00
Seattle	19.00	28.40	3.47mcc	4.19mcc	....	3.72mqcc	3.22hmcc	....	.50mcc	47.20ee
Toronto	......	......	....	....	....	4.45	4.10e	4.65o	1.70j	88.00A

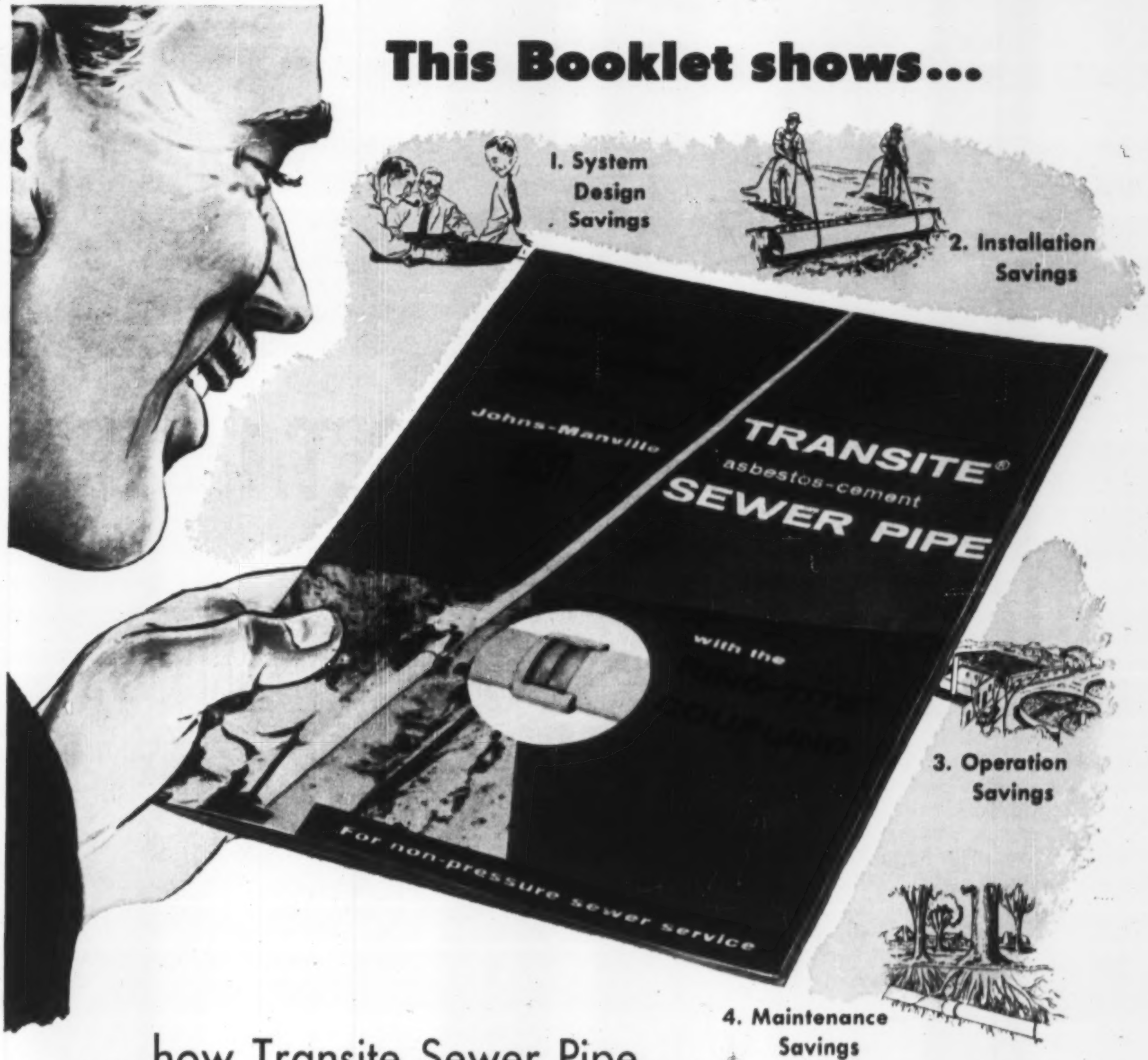
•‡ Delivered. • Note: Red lead in oil 50¢ higher than white lead in oil. •a Red lead prices change frequently due to pig lead price changes. •b U. S. War Dept. Spec 3-49A. •c ASTM Spec. D266-31. •d 80% minimum ferric oxide. •e 15 lb. •f Per 432 sq. ft. •g F.o.b.yard, Roxbury. •h Per roll, 65 lb. •i Net carload lot prices; Minneapolis and vicinity. •j 45 gal containers. •k Per cwt, •l Not used. •m 1% discount for cash. •n F.o.b. city. •o Per 60-lb. roll. •p 6-drum, 50 gal. ea. •q Per 90-lb roll. •r F.o.b. factory, Chicago. •s Truckload. •t Federal tax included, add 5% mun. & prov. tax. •u Per 90-lb. square. •v Per ton. •w Price to contractors $1.25 less. •x Mineral surfaced. •y 55-gallon container. •z Drums. •aa 15 lb., 324 sq ft roll. •bb Roofers coating and cement; Price per ton. •cc LCL, truck delivery. •dd 2% cash discount. •ee Asphalt pitch in 100 lb. package. •ff 5-gal. drums. •gg F.o.b. factory. •hh Incl. freight. •ii Per roll. •jj Asbestos roof coating. •A 400 lb barrels. •B ASTM Spec D-962-49. •D Std. Black. •E Ready-mixed. •F Over 80% ferric oxide. •* Aver. wt. approx. 425 to 550 lbs. drums.

PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER‡		VERMICULITE‡			PERLITE‡		ALUMINUM SHEETh†		STAINLESS STEEL† SHEET-TYPE 302g		COPPER WATER* TUBING-TYPE L 2000 ft lots per ft	
	Neat per ton	Gauging per ton	Home Insulation pellets	Plaster aggregate	Concrete Aggregate Untreated	Plaster Aggregate	Concrete Aggregate Untreated	Flat .102" th 36"x96" & 48"x144" per lbjt	Corr roof .032" th 35"x12' per shu	20 ga 48"x96-120" per cwthh	28 ga 36"x120" per cwtmm	¾"b	½"c
			per bag of 4 cu ft										
Atlanta	$31.00	$36.00	$1.55s	$1.65s	$1.80sl	$1.65	$1.65	$0.424n	$6.57n	$61.44n	$67.50n	$16.74f	$23.41f
Baltimore	22.85	33.25	0.95	1.15	1.15	1.15	1.65	0.391	0.427r	56.25	64.25	0.1931	0.2745
Birmingham	33.00	39.00	1.55	1.55	1.80l	1.55	1.55	0.471	10.02	62.26	70.76	0.2025	0.2464
Boston	22.00	30.00	1.40	1.40	1.45	1.45	1.50	0.505	28.56op	62.873dd	69.01ddff	0.1674	0.2341
Chicago	26.80	26.80	1.55	1.60	1.60l	1.50	1.50	0.474	9.805ap	62.65aee	71.15aee	0.1674	0.2341
Cincinnati	28.00*	28.00*	1.75	1.75	1.75	1.85	1.90	0.434	9.56	65.18	78.68ff	0.1668	0.2034
Cleveland	28.00	43.00	1.13ii	1.16ii	1.24l	1.45	1.45	0.44aa	8.66	65.08	73.58	17.64f	23.41f
Dallas	30.00	32.00	1.05	1.21	1.37l	1.21	1.37	0.379	0.439r	55.00	63.00	0.2001	0.2810
Denver	25.00	25.00	1.50	1.40	1.50	1.40	1.50	0.444	9.80	60.19gg	70.69gg	0.2006	0.2810
Detroit	25.00	25.00	1.28	1.32	1.41	1.45	1.45	0.455a	9.235a	65.00a	73.50a	16.74f	26.56f
Kansas City	30.00	35.00	1.25	1.35	1.50	1.40	1.60	0.451	10.95	67.14	75.81	18.99f	26.56f
Los Angeles	26.20	27.20	1.25ii	1.15k	1.25	....	....	0.484	9.98d	64.45	72.95	0.1899	0.2656
Minneapolis	32.00	32.00	1.50	1.60	1.80	1.40	1.40	0.481	.....	65.46	78.96ff	0.1674	0.2341
Montreal	27.60	35.60	1.20	1.40	1.50	1.15s	1.15s	0.437	9.92	66.50	......	0.228	0.287
New Orleans	32.00	45.00	1.25	1.25	1.35	1.25	1.25	0.422	8.303	62.04	70.54	0.1214	0.2768
New York	24.00	30.00	1.30	1.25	1.45	1.30	1.30	0.474ao	9.46ad	65.70	74.20	16.74f	23.41f
Philadelphia	23/25	32.00	1.35	1.35	1.40	....	....	26.50awx	7.50a	53.23a	60.98a	18.57f	26.09f
Pittsburgh	27.50	31.00	1.30	1.30	1.32	1.35	1.35	0.42	9.19	56.81	62.63	0.2045	0.2572
St. Louis	29.00	40.00	1.35	1.60jj	1.55	1.60	1.65	0.434	9.80	68.11	74.36	16.74fm	23.41fm
San Francisco	27.85	32.00	1.20	1.20	1.40	1.20	1.40	0.49	8.90	64.95	73.45	0.1674	0.2341
Seattle	40.00	43.00	1.45	1.25k	1.85l	1.50k	....	0.422	8.303	63.00	83.00	0.1674	0.2341
Toronto	28.50	45.50	1.20	1.30	1.45	....	....	0.4215	24.00ae	73.75	86.50	0.2835pp	0.3424pp

‡ trucklots, delivered † fob warehouse * fob city •a delivered •b ½" O.D. •c ⅝" O.D. •d 0.100"th •e 36" x 60" sheet •f per 100 ft •g 5 tons & up; cold roll, anneal & pickled; 2B finish •h 15M lb lots •j 1100 & 3003 alloy, mill finish •k per bag of 3 cu ft •l treated with air entraining agent •m 2-10M ft •n fob mill, fr allow •o 5M lb & up •p 100 sq ft quantity •r per lb •s 30# bag •t 36" x 96;-10.81 lb/sh; 48" x 144"; 21.7 lb/sh •u 19.31 lb/sh •v fob plant •w 48" x 144" •x $13.25 per 36" x 96" sheet •aa 16M lb & up •dd add $0.75 cwt for boxing •ee 4 tons & up •ff 26 ga •gg add $2/cwt boxing; $0.75/cwt on skids •hh Theoretical wt for 48" x 96"; 60.4-lb, per sh. •ii 300-bag lots •jj per 100-lb bag •mm Theoretical wt: 19.7-lb per sh. •pp Incl 10% sales tax

This Booklet shows...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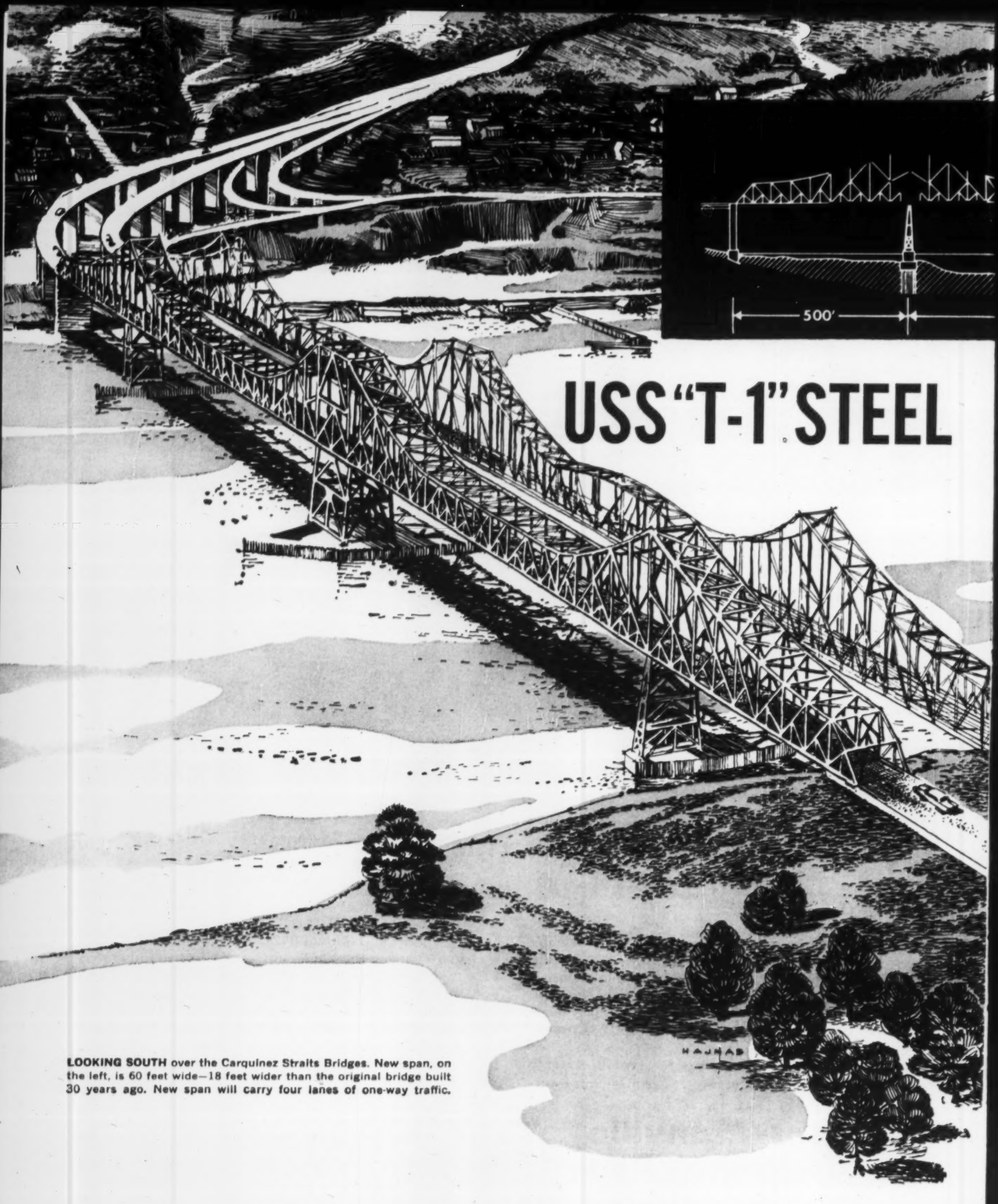
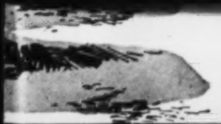
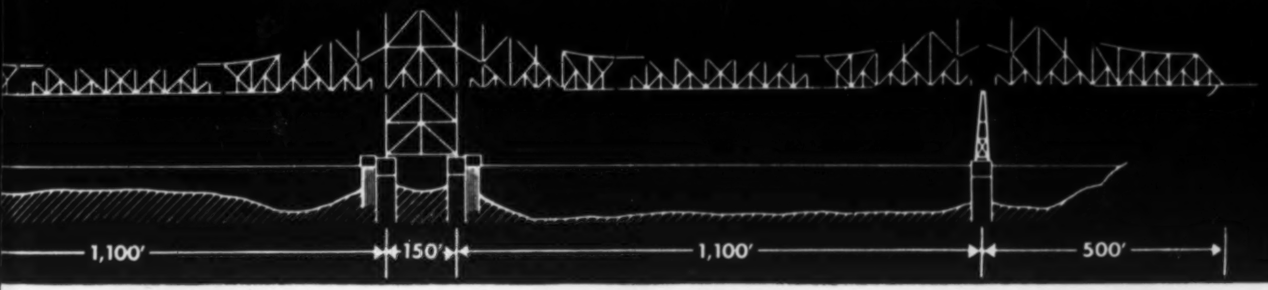
USS "T-1" STEEL



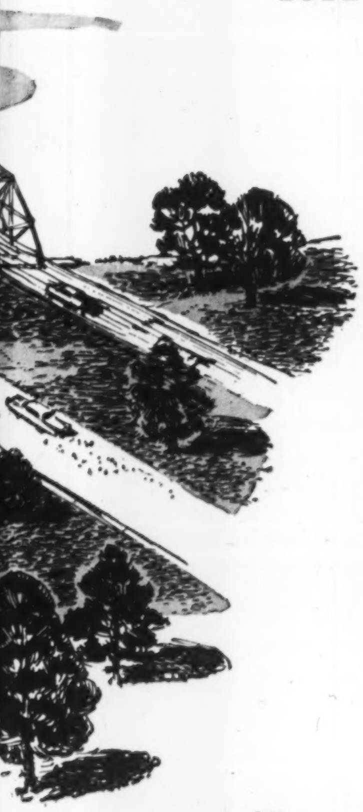
LOOKING SOUTH over the Carquinez Straits Bridges. New span, on the left, is 60 feet wide—18 feet wider than the original bridge built 30 years ago. New span will carry four lanes of one-way traffic.



NEARLY 500 of the more than 1,000 gusset plates and 142 of the 664 truss members in the new bridge were made from USS "T-1" Steel. The weldability and very high strength of this remarkable alloy steel saved weight, time and money.



WILL SAVE $800,000 IN FIRST MAJOR BRIDGE APPLICATION



Next year the State of California will open a new toll bridge paralleling an existing structure across the Carquinez Straits. This will be the final step in a mammoth project underway to relocate some twelve and a half miles of very busy highway connecting the San Francisco Bay Area with the Sacramento Valley.

The new $20-million bridge will be unusual. While, in appearance, it is a near carbon copy of the present structure across the busy straits, it will employ some 2,900 tons of USS "T-1" Steel in its most highly stressed truss members. Of 664 members in the trusses, some 142 will be of welded construction and made of "T-1" Steel.

The weldability and 90,000 psi minimum yield strength of USS "T-1" Steel will dramatically simplify design and fabrication of critical members. Take one example, a lower chord member: In the new structure, it will be made from just five welded plates of "T-1" Steel and require 340 feet of 5/16" automatic fillet welds. But, had it been put together by stitch riveting, the method used in the original span, this same chord member would have required *eight* vertical plates, *four* angles, and *two* cover plates . . . plus *1,000* rivets and *3,600 punched and reamed holes!*

Besides ease of fabrication gained through welding, "T-1" Steel's tremendous strength permits big weight savings. For example: one of the top chord members of the new bridge will weigh 400 lbs. per ft. and have a section area of 117.19 sq. in. A structural carbon steel (ASTM A-7) member for the same location would weigh 996 lbs. per ft. and would require a section of 293 sq. in. Lighter, smaller members mean reduced moment of inertia and important reductions of secondary stresses.

According to design computations by the State of California, USS "T-1" Steel will save approximately $800,000 in building the new Carquinez Straits Bridge—the first major bridge application of this remarkable constructional alloy steel.

For More Information—Write on your company letterhead for our newly revised, comprehensive booklet entitled "T-1." You'll find in it a wealth of engineering and metallurgical data. Or, contact our nearest representative—you'll find him listed in the telephone directory under UNITED STATES STEEL.

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USS "T1" CONSTRUCTIONAL ALLOY STEEL

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UNITED STATES STEEL

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager

J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, F. S. DEMBEK, Reports.

J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† **Conn., Groton**—PIPING REPAIRS—BA 4/30—U. S. Naval Submarine Base, Officer in Charge of Constr., New London, service piping repairs, Grayling Ave. to Buildings 108 and 151 and Building No. 157 to Pier No. 17.

BUILDINGS—BA

Mass., Everett—SCHOOL—BA 5/3—St. Anthony's R. C. Parish, Rev. Peter Bartolazzo, Oak St., (selected list bidders), parochial school, Oak St. $350,000. Plans deposit $25. Lawrence J. Cuneo, 110 Pleasant St., Malden, archt. CD 1/14.

▲ **Conn., Vernon**—SCHOOL—BA 5/16—Town, School Bldg. Com., Vernon, Vernon High School. $2,000,000. Plans deposit $50. CD 6/8.

HEAVY CONSTRUCTION—LB & CA

▲† **Carlo Bianchi & Co., Inc.**, 24 Union Ave., Framingham, Mass. CA **$3,817,155**. Hoosic River Basin, North Adams Flood Control Proj., Unit No. 5, North Adams, CIVENG-30-075-57-11, MASSACHUSETTS. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Feb. 25, under LB.

Perini Corp., Marine Div., 62 Condor St., **East Boston,** Mass. LB **$227,900**, est. $224,000. (1 bidder) dredging basin area, Manchester Harbor, Manchester, MASSACHUSETTS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Bids Apr. 9. CD 3/29.

Ralph Richard Co., 495 Whiting Ave., Dedham, Mass. LB **$413,140**, est. $322,139. constr. test embankment Rte. 107, U 261 (5) Revere, MASSACHUSETTS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Bids Apr. 9. CD 4/2.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Old Colony Constr. Co. of Quincy, P. O. Box 230, Quincy, Mass. CA **$848,448**, est. $988,376. hy. and bridge work, Rte. 138, U-344 (9), Randolph. CD 4/9, under LB.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

B. & M. Constr., Inc., P. O. Box 287, Hadley, Mass. LB **$133,230**, est. $137,885. hy. work north Elm and Locust Sts., Northampton. Bids Apr. 9. CD 3/27.

▲ **RHODE ISLAND**—State R. I. & Prov. Plants, Div. Purchase, State House, Providence,

Campanella & Cardi Constr. Co., 780 Jefferson Blvd., Warwick, R. I., LB **$1,820,818**. Contr. 5703, Bid 863, grading, drainage, 6.99 mi. Quaker Lane-Nooseneck Hill Rd., F. A. Proj. 1001 (15), Warwick, West Warwick, Greenwich and West Greenwich. Bids Apr. 10. CD 4/2.

CONNECTICUT—State Hy. Dpt., 165 Capitol Ave., Hartford, Bids opened 4/8,

Conn.—**E. T. O'Neill & Son Constr. Corp.,** P. O. Box 868, Holyoke, Mass., LB **$76,341**. (13 bidders) Proj. 55-78 single span composite rolled beam bridge over Salmon Brook approaches on Route 20, etc., Granby;

Conn.—**Bonvicini Bldg. Co., Inc.**, 1500 S. Main St., Torrington, Conn., LB **$76,469**. (7 bidders) Proj. 143-70, rein.-con. slab bridge square spans of 25 fr. over Gulf Stream, approaches on Route 25, Torrington. CD 3/22.

CONNECTICUT—State Hy. Dpt., State Office Bldg., Hartford, Bids opened 4/8,

Conn.—**Webster & Webster, Inc.**, 1366 Main St., East Hartford, Conn., LB **$562,295** (2 bidders) Proj. 314-07, guide railing median barrier railing and fencing on Conn. Turnpike, Milford, Orange, West Haven and New Haven;

Conn.—**National Fence Co., Inc.**, 33 S. Grove St., Meriden, Conn., LB **$194,978**, (2 bidders) Proj. 308-08, guide railing median barrier railing and fencing on Conn. Turnpike, Fairfield and Westport;

Conn.—**Angelo Tomasso, Inc.**, Warren St., New Britain, Conn., LB **$103,076**. (7 bidders) Proj. 37-67, b. conc. resurf. 7,425 lin. ft. Main St. Route 17, Durham. CD 3/22.

BUILDINGS—LB & CA

New London Hospital Md. Trustees, c/o Administrator, New London, N. H., rejected bids Mar. 20, HOSPITAL, NEW LONDON, N. H., LB **$757,675**. Will re-advertise. CD 3/27, under LB.

▲ **Holyoke Water Power Co.**, R. A. Barrett Jr., pres., 1 Canal St., Holyoke, Mass. Separate Contracts. Over **$30,000,000**. Smith's Ferry-O'Hares Grove Steam Generating POWER PLANT 137,500 kilowatts, HOLYOKE, MASS. Jackson & Moreland, Park Square Bldg., Boston, Mass., engrs. CD 9/7.

J. G. Roy & Sons Co., 21 Silver St., Springfield, Mass. CA **$250,000**. SHOWROOM and GARAGE, Main and Mill Sts., SPRINGFIELD, MASS. Sterling A. Orr, Inc., 125 Liberty St., Springfield, Mass. Bids Mar. 15. CD 3/7.

O. D. Purrington Co., Inc., 49 Westminster St., Providence, R. I. LB **$549,000**. ELEMENTARY SCHOOL, north of Griswold St., TURNERS FALLS, MASS. Town of Montague, Raymond George, chn. Elementary School Bldg. Comn., c/o Supt. Schools, Turners Falls, Mass. Bids Apr. 9. CD 3/20.

▲ **George A. Fuller Co.**, 597 Madison Ave., New York, N. Y. CA **$5,000,000**, rebuilding St. Joseph's CATHEDRAL, Farmington Ave., HARTFORD, CONN. Archdiocese of Hartford, Chancery Office, 140 Farmington Ave., Hartford, Conn. CD 1/11.

▲ **John Zandonella, Inc.**, 70 Chase St., Bridgeport, Conn., LB **$3,114,000**. HIGH SCHOOL, North Ave., WESTPORT, CONN. Town School Bldg. Comn., Jessup Rd., Westport, Conn. Bids Apr. 8. CD 3/15.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

Del., Wilmington—BA 4/30—Levy Court, New Castle Co., Public Bldg., 11 and King Sts., Contract 1957-8. 2,550 ft. 8- to 15-in. terra cotta sanitary sewers in Mill Creek Hundred. Plans deposit $3: John I. Cahalan, engr. CD 11/10/55.

Pa., Phila.—TAXIWAY CONNECTION—BA 5/2—City, Dpt. Procurement, City Hall Annex, Bid No. 6579, taxiway connection T-8a between taxiway T-4 and Runway 15-33 and appurtenant work, Contr. A 140-NE, North Phila. Airport. CD 5/9.

Pa., Phila.—BA 5/2—City, Dpt. Procurement, City Hall Annex, grading, asph. paving, incl. constr. water mains, Haldeman Ave.; b. conc. paving asph. resurf., reconstr. traffic signal system, central business district, imprv. Walnut Lane, incl. grading, paving, bridge constr., sewers and water mains. CD 10/28/43.

N. Y., Rome—BA 5/6—Purch. Agent, City Hall, concrete masonry dam and accessories on east branch of Fish Creek, approx. 17 mi. northwest of city. Malcolm Pirnie Engineers, 25 W. 43 St., New York, Zone 36, engrs. CD 9/20.

† **Md., Andrews Air Force Base**—STORAGE ACILITIES—BA 5/7—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., ammunition storage facilities, ADC type, ENG-49-080-57-80-(78). CD 4/4.

BUILDINGS—BA

Pa., West Chester—HOSPITAL—BA 5/1—Oakburne Colony Hospital, South Concord St., hospital dormitories addns., alterations, $344,000, Gibson & Kline, 117 S. 17 St., Phila., engrs. Martin, Stewart & Noble, 117 S. 17 St., Phila., archts.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: **Before and including appointment of engineers or architects.**

BIDS ASKED: **BA (new announcements only). For full calendar, see also preceding issues.**

SOON LETS CONTRACT: **SLC**

LOW BIDDERS: **LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.**

CONTRACTS AWARDED: **CA Except awards to low bidders previously reported in low bidder stage.**

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

Pa., East Greenville—SCHOOL—BA 5/9—Upper Perkiomeen Joint School Bd., high school addn., gymnasium and athletic field, $830,000. Extended date, Wolf & Hahn, 459 Hamilton St., Allentown, archts.-engrs. CD 4/1.

▲ **N. J., Asbury Park**—HOUSING—BA 5/11—Asbury Park Housing Auth., Washington Ave., 63 housing units on Lincoln Place and West Lake Ave. $1,000,000, Barnett Singer, 15 Benmore Terrace, Bayonne, archt. CD 9/17.

▲ **Del., Newark**—SCHOOL—BA 5/15—Newark Special school Dist., Newark, Ogletown Elementary School, $1,480,000. E. William Martin, 830 West St., Wilmington, archt.

▲ **Del., Stanton**—SCHOOL—BA 8/14—Stanton School Dist. Stanton, Junior High School, $1,000,000. Whiteside, Moeckel & Carbonell, 909 Tatnall St. Wilmington, archts. CD 2/28/56.

HEAVY CONSTRUCTION—LB & CA

† **General Electric Co.**, 1 River Rd., Schenectady, N. Y. LB **$81,126**. (7 bidders) design, mfg., furnishing, 30 high voltage disconnecting switches and appurtenance for Barnhart-Plattsburgh transmission proj., Contr. No. TP 5, NEW YORK. The Power Authority of the State of New York, 270 Broadway, New York, N. Y. Bids Apr. 2. CD 3/7.

▲ **NEW YORK**—John W. Johnson, supt. Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany,

N. Y.—**Troy Slag Products Co., Inc.**, foot of Monroe St., Troy, N. Y. CA **$537,865**. De-Kalb Junction-Rensselaer Falls (Town Rd.) 5.94 mi., FASS 57-2, St. Lawrence Co. CD 3/6, under LB;

N. Y.—**Ardor & Booth, Inc.**, 1130 Water St., Watertown, N. Y. CA **$520,544**. relocation, reconstr. 1.02 mi. Sect. Rte. 11, bypassing to the north of present Main and Antwerp St.; route through Phila. starting at Church St. in Phila., extending northeastward along the same alignment, then on new alignment across a new 168 ft. long bridge over Indian River, FARC 57-12, Jefferson Co.;

N. Y.—**Bero Constr. Corp.**, 259 Delaware Ave., Buffalo, N. Y. CA **$6,441,677**. constr. 1.24 mi. six-lane portion of State Thruway's Niagara Section in Buffalo, four railroad lines grade separation structures at Smith St., Van Rensselaer St. and Hamburg St. and two other overpasses over railroads, Erie Co.;

N. Y.—**Potter-DeWitt Corp.**, Pavilion, N. Y. CA **$597,670**. wid'n., reconstr. Hunt Rd. (County Rd. 82) from Jamestown's west city line westward to County Rd. 75 distance 4.26 mi., Chautauqua Co. Grand total $8,096,756. CD 3/1, under LB.

▲ **NEW YORK**—John W. Johnson, supt. Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany,

N. Y.—**Massachusetts Northern Constr. Corp.**, 588 Essex St., Lawrence, Mass. CA **$2,749,975**. constr. seven span 840 ft. long welded plate girder bridge and approaches with interchange facilities over Grasse River in Massena connecting Center St. with Parker Ave. involving 1.24 mi., St. Lawrence Co.

N. Y.—**Bates & Rogers Constr. Corp.**, 600 W. Jackson Blvd., Chicago, Ill., CA **$1,490,000**. elimination of grade crossing between Porter Ave. the N. Y. Central R.R. and State Thruway Niagara Sect. in Buffalo, Porter Ave. carried over railroad tracks and Thruway involving 2.84 mi., Erie Co. CD 3/1, under LB.

NEW JERSEY—State Hy. Auth., 12 Broad St., Red Bank,

M. J. Stavolax, Inc., P. O. Box 482, Red Bank, N. J. CA **$342,723**. imprv. southbound roadway and shoulder stabilization from Raritan River to Keyport in Matawan Boro, Matawan Twp., Madison Twp. and Boro of Sayreville, Sayerville. Bids Mar. 21. CD 3/4.

Croft Constr. Co., Brace Rd. Haddonfield, N. J. CA **$286,000**. water main exten., Evergreen Ave., etc., HADDONFIELD, N. J. Boro, Haddonfield, N. J. Walter H. MacNamara, 822 Federal St., Camden, N. J., engr.

▲ **Joseph L. Muscarelle, Inc.**, Rte. 17 and Essex St., Maywood, N. J. CA **$1,383,257** (8 bidders) constr. pavements and utilities for 3 transit sheds, (Bldgs. Nos. 290, 291 and 292) on north side of city channel at Port Newark, Contr. PN-340.008, PORT NEWARK, N. J. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. CD 3/22, under LB.

Reisinger Bros., Inc., E. North Street Extended, Carlisle, Pa. LB **$889,000** (4 bidders) Contr. No. 1, general constr. sewage treatment work, CARLISLE, PA. Boro Sewer System Auth., Boro Hall, Carlisle, Pa. Bids Apr. 9. CD 3/18.

Joseph Lombardi & Sons, 1311 S. Broad St., Phila. 47, Pa. CA **$777,612**. Bid 2770, reconstr. sewers in Christian St., incl. relay of water mains, PHILA., PA. City, Dpt. Procurement, City Hall Annex, Phila., Pa. CD 4/15, under LB.

† **Somers Constr. Co.**, Bala Cynwyd, Pa. LB **$304,732** auxiliary bldg. at Naval Air Material Center, NBy 11552, PHILA., PA. Dpt. Navy, Phila. Naval Base, Phila., Pa.

Joseph Lombardi & Sons, 1311 S. Broad St., Phila., Pa. LB **$777,622**. Sewers Bid 2770, PHILA., PA.

(Continued on Page 110)

"WE CONSIDER BLAW-KNOX STEEL STREET FORMS IN THE TOP BRACKET OF OUR BEST INVESTMENTS"

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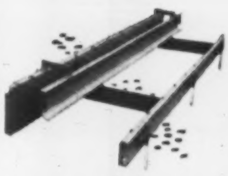
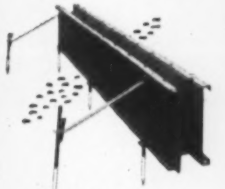
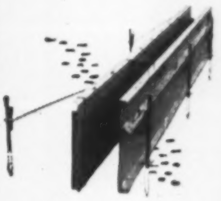
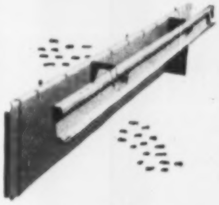

Curb and Gutter Forms


Curb Forms, vertical back and face

Curb Forms vertical back with battered face


Curb Forms, battered exposed face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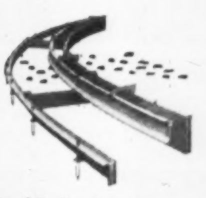
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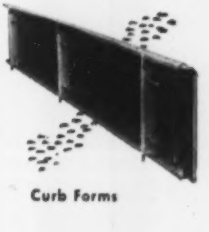
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CONSTRUCTION EQUIPMENT DIVISION

41 Charleston Ave., Mattoon, Illinois

(Continued from page 108)

City, Dpt. Procurement, City Hall Annex, Phila., Pa. Bids Apr. 2. CD 3/21.

▲ **McLean Contg. Co.,** Fidelity Bldg., Baltimore, Md. CA Total est. **$4,000,000.** substructure and foundation 1 story, steel, concrete fruit pier, BALTIMORE, MD. Baltimore & Ohio R.R. Co., K. J. Wagoner, ch. engr., 2 N. Charles St., Baltimore 1, Md. CD 7/20.

BUILDINGS—LB & CA

▲ **Southcrest Homes,** c/o Charles Wood, archt., 630 Broadway, Amityivile, N. Y. Owner Builds. **$3,000,000.** 225 HOUSES, Southern State Parkway and Deer Park Ave., BABYLON, N. Y.

▲ **Oakwood Homes,** c/o Stanley H. Klein, archt., 89-31 161 St., Jamaica, N. Y. Owner Builds. **$13,000,000** 750 HOUSES on tract on Park Ave. south of Merrick Rd., BALDWIN, N. Y.

▲ **Colmar Constr. Co.,** 364 Gold St., Brooklyn 1, N. Y. CA **$3,831,000.** general constr. Sheepshead Bay HIGH SCHOOL, Batchelder and Coyle Sts., Aves. X and Y, BROOKLYN, N. Y. Director, Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Feb. 28, awarded Mar. 21. CD 3/4, under LB.

Teller Paving & Contg. Corp., 389 E. 167 St., New York, 56, N. Y. LB **$343,984.** (4 bidders) streets and yards imprvs. for Linden Houses (Proj. No. NYC-23) in area bounded generally by Cozine Ave., Schenck Ave., Stanley Ave. and Vermont St., BROOKLYN, N. Y. New York City Transit Auth., 299 Broadway, New York 7, N. Y. Bids Apr. 10. CD 3/26.

▲ **LeCesse Constr. Co.,** 1515 Lyell St., Rochester, N. Y. CA **$1,938,000.** HIGH SCHOOL, BUS GARAGE, FAIRPORT, N. Y. Bd. Educ., Fairport, N. Y. Bids Mar. 27. CD 3/12.

▲ **Orchard Park Homes,** c/o Lane Realty, 107-40 Queens Blvd., Forest Hills, N. Y. Owner Builds. **$640,000.** 40 HOUSES, 96 St. between 161 and 162 Sts., **$640,000.** 50 HOUSES, 96 St., HOWARD BEACH, N. Y.

▲ **Park Ridge Homes,** c/o Henry A. Klar, 220-02 Horace Harding Blvd., Bayside Hills, N. Y. Owner Builds. **$1,000,000.** 60 HOUSES at 225 St. and 144 Ave., LAURELTON, N. Y.

▲ **James J. Waters Constr. Co.,** 415 Lexington Ave., New York, N. Y. CA **$2,414,000.** HIGH SCHOOL and BUS GARAGE, MASSENA, N. Y. Massena Central School Dist., No. 1, Massena, N. Y. CD 4/12, under LB.

Grace Terrace Estates, c/o Lane Realty, 107-40 Queens Blvd., Forest Hills, N. Y. Owner Builds. **$800,000.** 47 HOUSES, Laconia Ave. between 219 and 220 Sts., NEW YORK, N. Y.

▲ **Wilaka Constr. Co., Inc.,** 11 E. 44 St., New York 17, N. Y. CA Est. **$2,000,000.** 8 story HOSPITAL on block bounded by 210 St., Steuben Ave., Gun Hill Rd. and Bainbridge Ave., NEW YORK, N. Y. Montefiore Hospital, 100 E. Gun Hill Rd., New York 67, N. Y. CD 8/30.

Cherry Hill Homes, c/o Butterly & Green, Inc., 168-25 Hillside Ave., Jamaica, N. Y. Owner Builds. **$450,000.** 15 HOUSES, Cold Spring Rd., SYOSSET, N. Y.

Flanigen & Hallman, Avalon, N. J. Separate Contracts. **$344,000.** RESIDENTIAL DEVELOPMENT, 20 units, Boat Basin, Bulkheads and utilities, AVALON, N. J. William H. Flanigen, 3430 First Ave., Avalon, N. J., archt.

▲ **Riverside Estates,** c/o Brunell & Kramer, 1201 E. Grand St., Elizabeth, N. J. Owner Builds. **$1,600,000.** 79 HOUSES, Park Ave., BERKELEY HEIGHTS, N. J. Harry Maslow, 275 Morris Ave., Elizabeth, N. J., archt.

Woodcrest Shopping Center, c/o Murray Realty Co., 1616 Walnut St., Phila., Pa. Separate Contracts. **$344,000.** SHOPPING CENTER, 25 stores, HADDONFIELD, N. J. Dante D'Anastasio, 1815 Federal St., Camden, N. J., arct.

George W. Shaner & Sons, Palmyra, N. J. CA **$689,843.** general constr. addn. and separate GYMNASIUM for Rancocas Valley Regional HIGH SCHOOL, MOUNT HOLLY, N. J. Rancocas Valley Regional High School Bd. Educ., Mount Holly, N. J. Bids Mar. 26, awarded Apr. 10 CD 3/13.

Lauter Constr. Co., 112 S. 16 St., Phila., Pa. CA **$147,728.** MANUFACTURING BLDG. addn., EASTON, PA. Victor Balata & Textile Belting, Easton, Pa. Anker & Schick, 1631 Cloverly Rd., Jenkintown, Pa., archts.-engrs.

E. Carol Fesmire, 308 York St., Jenkintown, Pa. CA **$100,000.** AUTO SALES and SERVICE BLDG., GLENSIDE, PA. John H. Fassit Sr., 5 Norman Lane, Chestnut Hill, Phila., Pa. Kneedler Mirich & Zantzinger, 12 S. 12 St., Phila. Pa., archts. George C. Lewis & Assocs., 1422 Chestnut St., Phila., Pa., engrs.

Baton Const. Corp., 1717 Sansom St., Phila., Pa. CA **$250,000.** 1 story, steel, block, 70,000 sq. ft. FACTORY, MIQUON, PA. W. C. Hamilton & Sons, Miquon, Pa. H. M. Wilson, 18 and Brandywine Sts., Phila., Pa., engr.

▲ **F. H. McGraw & Co.,** 51 E. 42 St., New York 17, N. Y. CA Over **$2,000,000.** design and construct six-stand (30 in.) BILLET MILL and auxiliary equipment, MONESSEN, PA. Pittsburgh Steel Co., Grant Bldg., Pittsburgh, Pa.

University of Pennsylvania Corp., College Hall, 34 and Woodland Ave., Phila., Pa., rejected bids Mar. 28. Moore School Electrical Engineering addn., PHILA., PA. Will re-advertise. CD 3/19.

Tabone & Barbera, 185 N. Main St., Pittston, Pa. CA **$600,000.** SCHOOL and OFFICE, BOILER PLANT, parking area, SCRANTON, PA. International Textbook Co., Wyoming Ave. and Ash St., Scranton, Pa. George Lewis, 445 Kressler Court, Scranton, Pa., archt.-engr.

▲ **United Constr. Co.,** 1204 Lincoln Ave., Pittsburgh 6, Pa. LB **$1,259,000.** JUNIOR SENIOR HIGH SCHOOL, SPRINGDALE, P. Allegheny Valley Joint School Dist., Springdale, Pa. Bids Mar. 27. CD 3/25.

▲ **Charles H. Tompkins Co.,** 907 16 St. N.W., Wash., D. C. CA **$1,075,000.** 5 story OFFICE, 608 13 St. N.W., WASH., D. C. First Federal Savings & Loan Assn., 608 13 St. N.W., Wash., D. C. CD 4/2, under LB.

Davis & Platt Co., 401 Butternut St. N. W., Wash., D. C. CA Est. **$750,000.** 2 story masonry MOTEL, 1917 Bladensburg Rd., N. E., WASH., D. C. Goldrocks Co., 201 K St. N. W., Wash., D. C. Donald H. Drayer, 1717 20 St. N. W. Wash., D. C., archt.

SOUTH

HEAVY CONSTRUCTION—BA

† Va., **Chincoteague**—SHOP—BA 4/29—**Dist. P. Wks.** Office, Fifth **Naval** Dist., Bldg. N-26, U. S. **Naval** Base, Norfolk, jet engine **maintenance** shop **Naval** Air Station, NBy-7707, Spec. 7707/**56**.

HEAVY CONSTRUCTION—LB & CA

▲ **GEORGIA**—State Hy. Dpt., Atlanta,

Ga.—**Ballenger Paving Co.,** Paris, S. C. CA **$1,086,181.** wid'n., reconstr. and resurg. wid'n. 3 bridges, 7 new bridges 10.778 mi. Homersville-Waycross Rd. F-0037-3 (2) Clinch and Ware Counties;

Ga.—**C. A. Rutledge Constr. Co., Inc.,** Winder, Ga. CA **$147,273.** grading, paving 1 bridge 2.87 mi. Monroe-Eastville Road, S-1049 (3) Walton and Oconee Counties;

Ga.—**W. L. Cobb Constr. Co.,** 388 E. Ponce de Leon Ave., Atlanta, Ga. CA **$150,137.** grading, paving and 1 bridge 3.42 mi. Welmyer-Walker County Line Road, RR PR 1496 (2) Chattooga Co.;

Ga.—**Swanee Timber Co.,** Swanee, Ga. CA **$91,619.** grading, paving 1 bridge 4.329 mi. State Rte. 135 Lowdes Co. Line Rd. RR PR 2512 (1), Lanier Co.;

Ga.—**Kennedy Constr. Co.,** Box 266 Ashburn, Ga. CA **$84,082.** paving 2 bridges 7.454 mi. Irwinville-Chula Rd, RR-PR 2224-A (1) and 2224-B (1) Tift and Irwin Counties;

Ga.—**W. T. Anderson, Inc.,** Thomson, Ga. CA **$178,899.** grading, paving, 2 bridges 5.333 mi. State Rte. 16-Casons Academy-State Rte. 16 Road, RR Pr 2538 (1), Warren Co.;

Ga.—**Hugh Steele Constr. Co.,** Centre, Ala. CA **$2,745,-949.** grading, paving, 1 grade separation structure, 1 double bridge 7.395 mi. Atlanta-Greenville S. C. Road, IN 403-2 (2) Gwinnett Co. CD 3/28, under LB;

Ga.—**Saunders & Perkins,** Newington, Ga. CA **$98,713.** road work RR-PR 1828 (2) Liberty Co. Grand total, $4,582,853.

† **Robert E. Lee & Co.,** Manning, S. C., LB **$532,986.** Canal 18, Section 1 and Structure 46, Central and

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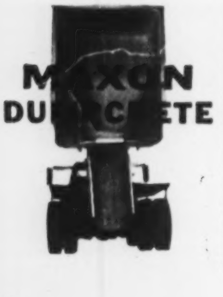

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Southern Florida Flood Control Proj., CIVENG-08-123-57-66, FLORIDA. U. S. Eng., Box 4970, Jacksonville, Fla. Bids Apr. 9. CD 3/13.

▲ **FLORIDA**—State Road Dpt., Tallahassee,
Cone Bros. Constr. Co., Box 1301, Tampa, Fla., CA **$1,117,780**, one 180 ft. concrete slab deck bridge on concrete piling bents, two box culverts, small drainage structures, limerock base with b. conc. surf. course 9.446 mi. SR 710, Job 9331-101, Palm Beach Co. Bids Feb. 12. CD 2/18, under LB.

Thomas D. Nolan, 1450 N.E. 130 St., North Miami, Fla., LB **$824,718**, Proj. 2, utilities, imprvs. gravity sewers exten., HOLLYWOOD, FLA. City Comn., C. W. Watson, city mgr., City Hall, Hollywood, Fla. Bids Apr. 9. CD 4/1.

State Dpt. P. Wks., State Capitol, Baton Rouge, La., cancelled bids to have been opened Mar. 18, Castor Creek Dam and Spillway Approx. 2 mi. northwest of Olla, LaSalle Parish, LOUISIANA. CD 3/12.

Rocco Ferrera & Co., 30105 W. 8 Mile Rd., Livonia, Mich. LB **$922,300** (7 bidders) Ohio River Interceptor Sewer, Contr. 226B, 4,500 ft. 8 ft. concrete sewer, LOUISVILLE, KY. Metropolitan Sewer Dist., 412 W. Market St., Louisville, Ky. Bids Apr. 11. CD 3/26.

W. D. Rommel Co., 1449 Hugh Ave., Louisville, Ky. CA **$814,222**. general constr. 2 clarifier basins, Crescent Hill Plant, LOUISVILLE, KY. Louisville Water Co., 431 S. Third St., Louisville, Ky. Bids Mar. 26, awarded Apr. 9. CD 4/1, under LB.

† **Empire Gas Eng. Co.**, 7 Baltimore Pl., Atlanta, Ga. LB **$356,250**. Bid Item No. 1, fuel storage, U. S. Naval Air Station, NBy 10288, Spec. 10288/57, MEMPHIS, TENN. Dist. P. Wks. Office, Bldg. No. 13, U. S. Naval Base, Charleston, S. C. Bids Mar. 19 CD 2/14.

BUILDINGS—LB & CA

▲ **John McShain, Inc.**, 3501 Sinclair Lane, Baltimore, Md., LB **$13,172,000**. 400-bed TEACHING HOSPITAL, W. Va. University's Medical Center, MORGANTOWN, W. VA. Bd. Governors, West Virginia University, Admin. Bldg., Morgantown, W. Va. Bids Apr. 10. CD 2/26.

▲ **Robert L. Turchin, Inc.**, 1835 Purdy Ave., Miami Beach, Fla., LB **$2,686,000**. Base Bid, 302-room Beau Rivage HOTEL, Collins and 99 Sts., BAL HABOUR VILLAGE, FLA. Corporation, c/o Melvin Grossman, archt., 311 Lincoln Rd., Miami Beach, Fla. Bids Apr. 5. CD 4/3.

J. B. **Mouton & Sons**, Lafayette, La. LB **$526,637** (3 bidders) CHURCH, LAFAYETTE, LA. Our Lady of Fatima Catholic Church, Rev. Michael J. Benedict, pastor, Lafayette, La. Bids Mar. 26. CD 3/12.

Louisiana-Mississippi Pipe Line Constr. Corp., and **St. Francisville Constr. Co.**, 503 N. Foster Dr., Baton Rouge, La. CA **$600,000**. grading, clearing site for PAPER MILL, ST. FRANCISVILLE, LA. St. Francisville Paper Co., St. Francisville, La. CD 1/7.

▲ **Virginia Engineering Co., Inc.**, 80 29 St., Newport News, Va. LB **$6,412,000**. (5 bidders) Southwick HOUSING, LOUISVILLE, KY. Louisville Municipal Housing Comn., Second and York Sts., Louisville, Ky. Bids Apr. 11. CD 3/13.

Newport Municipal Housing Comn., Fourth and York Sts., Newport, Ky., rejected bids Mar. 28, 50 HOUSING UNITS, NEWPORT, KY. LB **$604,698**. CD 4/8, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **ILLINOIS**—5/2—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago,

Contr. T-1-C—grading, draining, paving, appurts., bridges 5 mi. near Wood Blvd. extending westerly to Chicago Rock Island & Pacific right of way, $4,800,000. Sverdrup & Parcel, Inc., 1134 Locust St., St. Louis 1, Mo., sect. engrs.

Contr. T-9-B—grading, draining, paving, appurts., erecting precast concrete bridges 2.1 mi from Busse Hy. extending northerly to Golf Rd., $1,850,000. H. W. Lochner & Co., 150 N. Wacker Dr., Chicago, Ill., sect. engrs.

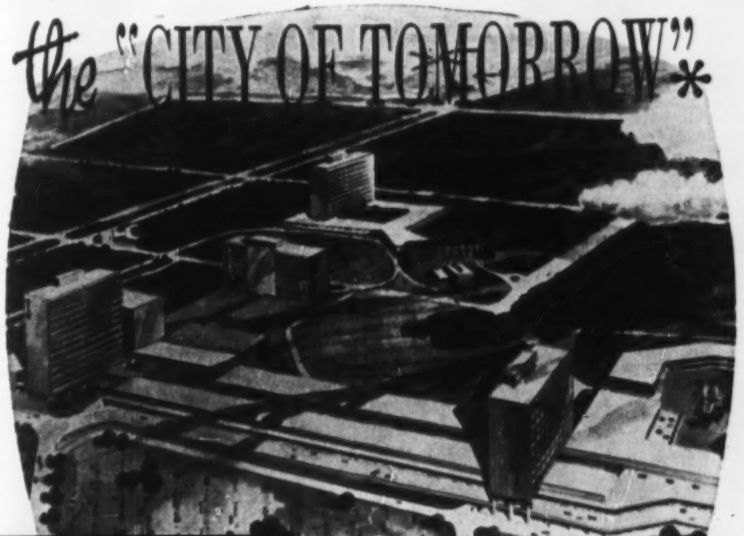
Contr. T-9-A—grading, draining, paving, appurts., erecting precast and stab. bridges, 2.29 mi. beginning near Touhy Ave. and extending northerly to Busse Hy., $2,000,000. H. W. Lochner & Co., 150 N. Wacker Dr., Chicago, Ill., sect. engrs. CD 5/11/56.

Mich., **Detroit**—BA 5/2—Huron-Clinton Metropolitan Auth., 1750 Guardian Bldg., Detroit, sewer and water facilities, 6,590 ft. 10 in. vitr. pipe sewer, 30 ft. 10 in. c.i. sewer, 225 ft. 10 in. c.i. river crossing, 490 ft. 8 in. vitr. pipe sewer, 390 ft. 12 in. rein.-con., 2,575 ft. 6 in. c.i. force main, 10,895 ft. 6 and 8 in. c.i. water mains, six 8 in. gate wells, 1 meter chamber, Hubbell, Roth & Clark, Inc., 954 N. Hunter Blvd., Birmingham, engr.

Mich., **Lapeer**—BA 5/6—City, Howard Gohlke, clk., Contr. No. 1, intercepting sewers, Sect. A, 3,507 lin. ft. 10- to 15-in. interceptor, 400 ft. 10 and 12 in. c.i. main; Sect. B, 5,711 ft. 12- to 18-in. sewer. Plans deposit $10 refundable; Contr. No. 2, sewage disposal plant treatment facilities, two sewage pumping stations. Plans deposit $25, refundable. McNamee, Porter & Seeley, 2223 Packard Rd., Ann Arbor, engrs. CD 8/23.

BUILDINGS—BA

▲ **O., Cincinnati**—PARKING GARAGE—BA 4/30—City, City Hall, converting 7 story Gibson Art Bldg. into parking garage, 4 and Plum Sts. $1,000,000. Plans deposit $20. Extended date. CD 3/29.



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Architects, Engineers and Site Planners: Lane, Gamble & Associates

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***Sealing Horizontal and Vertical Expansion Joints** between cast stone and panels.*

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A DIVISION OF AMERICAN-MARIETTA COMPANY
3784 CHOUTEAU AVE. ST. LOUIS 10, MO.

▲ **O., Columbus**—HOSPITAL WING—BA 4/30—Ohio State Dpt. P. Wks., State Office Bldg., hospital wing, Ohio State University, $3,000,000. Plans deposit $25. Garfield, Harris, Robinson & Schafer, 1740 E. 12 St., Cleveland, Zone 14, archts. CD 6/19.

Wis., Hartford—HOSPITAL—BA 5/1—St. Joseph Hospital, 1032 East Summer St., 3 story hospital. $600,000. Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., Green Bay, archts. CD 3/21/56.

▲ **O., Cleveland**—HOSPITAL—BA 5/10—Mount Sinai Hospital, 1800 E. 105 St., Zone 6, 10 story hospital addn. $5,000,000. Plans deposit $60. Dalton & Dalton, The Arcade, Zone 14, archts. CD 9/30/55.

BUILDINGS—SLC

▲ **Ill., Chicago**—APARTMENT—Howard F. Wallach & Harold S. Blankstein, 401 S. La Salle St., soon lets contract, 18 story, 128-units apartment and 51-car Garage, 27-39 E. Cedar St. $2,500,000. L. R. Solomon & Assocs., 61 W. Superior St., archts. CD 1/11.

HEAVY CONSTRUCTION—LB & CA

INDIANA—State Hy. Dpt., State House, Annex, Indianapolis,

J. C. O'Connor & Sons, Inc., 2104 Miner St., Fort Wayne, Ind., CA **$97,092.** one 50 ft., one 60 ft., one 50 ft. continuous steel beam over B & O R.R., 6.5 mi. northeast of Valparaiso, Porter Co. Bids Dec. 6, awarded Mar. 14. CD 12/13, under LB.

▲ **WISCONSIN**—State Hy. Com., State Office Bldg., Madison, Bids opened 4/11.

Wis.—**Ben Ruesch, Medford, Wis.**, LB **$218,812**. Contract 1, grading, base, structures 12.155 mi. S. T. Hy. 13, Washburn-Bayfield Rd., Proj. T 011-2 (12) Bayfield Co.;

Wis.—**R. T. Madden Co.**, Janesville, Wis., LB **$326,573** contract 1, c. conc. 2.471 mi. U. S. Hy. 51, Stoughton S.T.H. 30 Road, Proj. F 05-1 (30), Dane Co.;

Wis.—**Braun Constr. Co.**, Hy. 175, Fond du Lac, Wis., LB **$381,916**, Contract 1, grading, base, and pavement 1.62 mi. S.T. Hy. 175 and U. S. Hy. 151, Main St., U.S.H. 41-Fond du Lac Road, and U.S.H. 151 Interchange, Proj. U 03-1 (51), T 03-1 (12), and T 017-3 (13), Fond du Lac Co.;

Wis.—**R. R. Birdsall & Sons Co.**, 1025 12 St., Racine, Wis., LB **$262,970**. Contract 1, grading, base, c. conc. 0.991 mi. 30th Ave. US 0942 (2), Kenosha Co.;

Wis.—**Farmers Bros.**, Tomah, Wis., LB **$328,156** Contract 1, c. conc. base, b. conc. 1.482 mi. Main St. and Fond du Lac St., S.T. Hy. 49 and U.S. Hy. 151, Proj. T072-1 (6), T 035-1 (5) and T 017-2 (16), Dodge and Fond du Lac Counties;

Wis.—**Schneider-Borchert Co.**, 606 W. Wisconsin St., Fond du Lac, Wis., LB **$129,089**, Contract 1, c. conc. b. conc. 0.272 mi. North 35 St. U. S. Hys. 16 and 18, Proj. U01-1 (3), Milwaukee Co.;

Wis.—**Joseph D. Bonness**, 1409 N 27 St., Milwaukee, Wis., LB **$703,347**. Contract 3, c. conc. and structures 0.486 mi. N. Green Bay Ave., S. T. Hy. 57, Proj. U 5709 (6), Milwaukee Co.;

Wis.—**Mathy Constr. Co.**, 508 Hoeschler Bldg., Madison, Wis., LB **$148,887**, Contract 1, single aggreg., bit. surf. 7.245 mi. The Osseo-Augusta Rd. Proj. T 0149 (3) and T 0149 (4), S. T. Hy. 27, Trempealeau and Eau Clarie Counties; LB **$317,930**. Contract 1, single aggreg. bit. surf. 17.337 mi. The Ellsworth-River Falls, Ellsworth-Plum City, and Prescott-Ellsworth Roads, S. T. Hy. 35 and U. S. Hy. 10 Proj. T 028-2 (1), T 019-1 (24), T 019-1 (23) and A.F.E. 49-731, Pierce Co. CD 3/29.

Ray D. Baker, Box 5155, Southfield Station, Detroit 35, Mich. CA **$103,987**. WW imprvs., MADISON HEIGHTS, MICH. City, Myrtle Chamberlain, city clk., City Hall, Madison Heights, Mich. Bids Mar. 20. CD 3/18.

▲† **A. J. Etkin Constr. Co.**, 10111 Capital Ave., Oak Park, Mich. CA **$1,184,724**. airfield bldgs., Wurtsmith Air Force Base, OSCODA, MICH. U. S. Eng., 600 E. Jefferson St., Detroit, Mich. CD 4/11, under LB.

A & A Asphalt Paving Co., 4140 Lapeer Rd., Pontiac, Mich. CA **$136,431**. 2 in. b. conc. pavement, PONTIAC, MICH. City, City Hall, Pontiac, Mich. Bids Mar. 18. CD 3/5.

BUILDINGS—LB & CA

Dunlop & Johnston, Inc., 19220 Miles Ave., Cleveland 28, O., LB **$810,000**. AUDITORIUM and extra classrooms BLDG., CLEVELAND, O. The Temple, Ansel Rd. and E 105 St., Cleveland, O. CD 5/25.

J. O. Hunting Co., 9th-Chester Bldg., Cleveland 14, O., LB **$565,435** (7 bidders) general contract, Byron JUNIOR HIGH AUDITORIUM, SHAKER HEIGHTS, O. Shaker Heights Bd. Educ., 3115 Woodbury Rd., Cleveland Zone 20, O. Bids Apr. 9. CD 3/11.

The Knowlton Co., 1133 W. Columbus St., Bellefontaine, O., CA **$836,000**. HIGH SCHOOL, Sharon and Chester Rds., SHARONVILLE, O. Princeton Local School Dist., 336 Reading Rd., Sharonville, O. Bids Mar. 7. CD 1/22.

▲ **Procon, Inc.**, 1111 Mt. Prospect Rd., Des Plaines, Ill., CA Est. **$7,250,000.** fluid catalytic cracker and gas concentration facilities at REFINERY, BLUE ISLAND, ILL. Clark Oil & Refining Corp., 131 and Kedzie St., Blue Island, Ill. Universal Oil Products Co., 30 Algonquin Rd., Des Plaines, Ill., engr.

▲ **Project Development, Inc., Max** Manes, pres., 158 High St. N E., Warren, O. Own Forces, **$3,000,000**. 186-unit HOUSING DEVELOPMENT, "Fairlawn Heights" North Rd. in Howland Twp., WARREN, O.

▲ **Fluor Corp.**, 2500 S. Atlantic St., Los Angeles, Calif., CA **$4 000,000**. 1 story brick ROLLING MILL addn., CHICAGO, ILL. Hydrometals, Inc., 2959 W. 47 St., Chicago 32, Ill.

L. J. Graf Constr. Co., 6327 N. Pulaski Rd., Chicago, Ill., CA **$875,000.** 3 story SCHOOL, Chicago Ave. and State St., CHICAGO, ILL. Cathedral of the Holy Name, 730 N. Wabash Ave., Chicago, Ill. McCarthy & Smith, 69 W. Delaware Pl., Chicago, Ill. archts. Awarded Mar. 28. CD 11/12/54.

Erickson & Lindstrom Constr. Co., 310 Sill Bldg., Flint, Mich. CA **$577,107.** F. A. Bower THEATER and Robert T. Longway PLANETARIUM, FLINT, MICH. City, Bd. Educ., 205 E. Eighth St., Flint, Mich. Bids Feb. 28. CD 2/13.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲ **Colorado**—BA 4/30—TRANSMISSION LINE—Colorado-Ute Electric Assn., Inc., Montrose, 115-kv transmission line for steam generating plant, Nucla. Bids 4/2 rejected. LB **$1,055,512**. CD 4/11, under LB.

Minn., Glencoe—BA 4/30—McLeod Co., Lida C. Luthens, aud., subgrade, corrections, grav. base and road-mixed bit. surf. 6.9 mi. between SAR 2, 2.5 mi. south of Glencoe and east line of McLeod Co., S.P. 43-602-01 (SAR 1) Minn. Proj. S 6304 (4). Plans deposit 50c.; grading, grav. surf. 8.7 mi. between west jct. of CAR 53, 3.5 mi. northeast of Stewart and SAR 8, 1.5 mi. south of Hutchinson, S.P. 43-614-01 (SAR 7), Minn. Proj. S 6294 (1), Plans deposit $1.60, $130,000, W. J. Baseman, co. hy. engr.

Minn., Shakopee—BA 4/30—Scott Co., A. A. Mertz, aud., grading, grav. surf. 4.5 mi. between CAR 75, 5 mi. north of south line of Scott Co. and 2.5 mi. southwest of Prior Lake, S.P. 70-603-02 (SAR 23) Minn. Proj. S. 6276 (4); 2.8 mi. between 1.25 mi. south of Shakopee and Marystown, S.P. 70-607-02 (SAR 5) Minn. Proj., S. 6283 (2); Plans deposit $1.60; grav. base road-mixed bit. surf. 3.7 mi. between T.H. 282 in Jordan and 3.7 mi. east, S.P. 70-511-64 (SAR 6) Minn. Proj. S. 6166 (2), Plans deposit 50c., $110,000, L. Ploumen, co. hy. engr.

Minn., Walker—BA 4/30—Cass Co., L. C. Peterson, aud., grading, grav. surf. 7.9 mi. between TH 64 and CAR 24, 6.3 mi. west of Pine River, S.P. 11-606-01 (SAR 2) Minn. Proj. S 6555 (3), Plans deposit $2.35; grav. base, road-mixed bit. base 4.5 mi. between 4.5 mi. west of TH 371 and TH 371, 2.5 mi. north of Hackensack, S.P. 11-608-01 (SAR 6) Minn. Proj. S 6574 (1). $110,000. Plans deposit 50c., D. Cole, co. hy. engr.

† **Ark., Fort Smith**—PARKING APRON—BA 5/2—U. S. Eng., P. O. Box 867, Little Rock, constr. 275 x 422 ft. extension to aircraft parking apron, thickness 9 in. cement, relocate sewer, electric lines, constr. water line, erosion control, ENG-03-050-57-41. $100,000-$500,000. CD 4/11.

† **Minn., Duluth**—DORMITORY—BA about 5/14—U. S. Eng., 1217 U. S. Post Office & Custom House, St. Paul, Zone 1, airmen's dormitory, Duluth Air Force Base, ENG.-21-018-57-12. CD 8/23.

† **N. M., Las Cruces**—BA About 5/20—U. S. Eng., P. O. Box 1538, Albuquerque, sewage disposal plant, White Sands Proving Ground, ENG.-29-005-57-43.

† **N. M., Las Cruces**—ELECTRICAL DISTRIBUTION—BA About 5/21—U. S. Eng., P. O. Box 1538, Albuquerque, expansion of electrical distr., White Sands Proving Grounds., ENG.-29-005-57-17. CD 8/29.

BUILDINGS—BA

▲ **Tex., Austin**—UTILITY—BA 5/3—Board for Texas State Hospitals & Special Schools, 4405 Lamar Blvd., 83,320 sq. ft. ward bldg. and utility bldg., Proj. No. 191-L-56-8C, $1,000,000. Kuehne, Brooks & Barr, 203 Perry-Brooks Bldg., Austin, archts.-engrs. J. Roy White and Allwyn G. Gannaway. Assocs., and B. Segall, Jr., 705 Lamar Blvd., Austin, engrs. CD 3/27, under LB.

Tex., Mexia—HOSPITAL, etc.—BA 5/3—Texas State Hospitals & Special Schools Bd., 4405 Lamar Blvd., c/o W. C. Moore, Austin, constr. hospital and administration bldg. $490,000. Plans deposit $25. Wilson, Patterson & Assocs., 601 Bailey St., Fort Worth, archts. CD 1/18, under LB.

▲ **Tex., Houston**—CLASSROOM—BA About 5/5—University of Houston, 705 Fannin St., Fred J. Heyne Classroom Bldg. $1,000,000. Cato & Austin, 2401 LaBranch St., archts., Robert J. Cummins, Union National Bldg., and Lockwood & Andrews, 1010 Waugh St., engrs. CD 11/29.

† **N. M., Albuquerque**—BUILDINGS—BA 5/9—Atomic Energy Comn., 4001 Gibson Blvd., P. O. Box 5400, modifications to 4 bldgs., ENG-2-92-57-11. $590,000-$600,000.

Ark., Jonesboro—MEN'S DORMITORY—BA 5/15—Arkansas State College, Jonesboro, 2 story, 4 wing men's dormitory on campus incl. utilities, landscaping and equipment, $650,000, Elmer Stuck, Jonesboro, Ark., archt.

† **N. M., Albuquerque**—ARMORY—BA About 5/16—U. S. Eng., P. O. Box 1538, repair to U.S.A.R. Armory, ENG-29-005-57-88.

Tex., Houston—SCHOOL—BA 5/21—Houston Independent School Dist., 1300 Capitol St., Atherton Elementary School, north of Dogan. $600,000. Frank C. Dill, 1211 Hyde Park St., archt. CD 3/8.

▲ **Tex., Houston**—SCHOOL—BA 5/23—Houston Independent School Dist., 1300 Capitol St., "Briargrove" Elementary School. $1,100,000. Extended date. Cameron Fairchild & Assocs., 2626 W. Dallas St., archts. CD 3/21.

Tex., Houston—SCHOOL—BA 6/4—Houston Independent School Dist., 1300 Capitol St., Clinton Elementary School for Negroes. $550,000. Vance D. Phenix, 2425 Ralph St., archt. CD 3/8.

Tex., Robstown—PLANT—Bids Asked—Sam Hausman, 1222 Laredo St., Corpus Christi, meat processing plant unit. $175,000. Walter Wisznia, 3226 Reid Dr., Corpus Christi, archt. H. P. McElhaney, Wilson Bldg., Corpus Christi, engr., CD 1/2.

BUILDINGS—SLC

Fla., West Palm Beach—PIPING—Pratt & Whitney Aircraft Div. of United Aircraft Corp., 400 Main St., East Hartford, Conn., soon lets contract Job 2129-G, piping and equipment for fuel tank farm. George H. Miehle, 345 New Center Bldg., Detroit, Zone 2, Mich. engr. CD 9/21.

HEAVY CONSTRUCTION—LB & CA

Lametti & Son, 211 N. Pascal St., St. Paul, Minn. CA **$262,257**. N trunk sanitary sewer, N trunk water main, storm sewer, sanitary sewer and water laterals, COLUMBIA HEIGHTS, MINN. City, R. L. Ernest, mgr., Columbia Heights, Minn. Bids Mar. 26.

† **G. I. Johnson & Son Co.**, 848 W. 79 St., Minneapolis, Minn. LB **$302,435** (3 bidders) club service bldg. Air Force Base, ENG-21-018-57-9, DULUTH, MINN. U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul, Minn. Bids Apr. 9. CD 3/19.

IOWA—State Hy. Comn., Ames,

Kaser Constr. Co., 3111 Ingersoll St., Des Moines, Iowa. CA **$538,322**. b. conc. 19.877 mi. Allamakee Co. Bids Apr. 2. CD 4/9, under LB.

Jackson Constr. Co., Nevada, Iowa. CA **$328,372**. paving, CEDAR FALLS, IOWA. City, City Hall, Cedar Falls, Iowa. Bids Mar. 25. CD 3/8/55.

MISSOURI—State Hy. Dpt., Jefferson City,

Clarkson Constr. Co., 4133 Gardner Ave., Kansas City, Mo. CA **$251,117**. 140 ft. plate girder extensions Sta. 53 plus 81 under Independence Ave., Jackson Co. Bids Mar. 29, awarded Apr. 11. CD 4/11, under LB.

MISSOURI—State Hy. Dpt., Jefferson City,

Mo.—**Peter Kiewit Sons Co.**, 1024 Omaha National Bank Bldg., Omaha, Neb. LB **$644,160**. 51 ft. c. conc. 1.875 mi., Boone Co.;

Mo.—**Giesler Bros. Constr. Co.**, 943 Grand Ave., Perryville, Mo. CA **$81,997**. grav. or crushed stone surf. 9.4 mi., Cape Girardeau Co. Bids Mar. 29, awarded Apr. 11. CD 4/11, under LB.

Haggart Constr. Co., 403 First National Bank Bldg., Fargo, N. D. LB **$284,766**. base bit. surf., WILLISTON, N. D. City, Williston, N. D. Bids Apr. 2. CD 3/22.

Everetts & Kelso, Jamestown, N. D., LB **$371,133**. (4 bidders) paving, curb and gutter, WISHEK, N. D. City, Wishek, N. D. G. J. Toman, Mandan, N. D., engr. Bids Mar. 19.

Hunter & Lundberg, 310-A Poyntz St., Manhattan, Kan. CA **$425,747**. WW sys. Contr. 8, treatment plant addn., using Alternates 1A, 2A, 3A and 4A, incl. 4 new ¾ MGD filters, appurtenances, piping and equip., MANHATTAN, KAN. City, Orpha Stewart, clk., Manhattan, Kan. CD 2/20, under LB.

Shawner & Hale, Maud, Okla., LB **$75,000**. laying gas pipe to connect with gas transmission main, Fransworth area, TEXAS. Sinclair Oil & Gas Co., c/o Petroleum Bldg., Houston, Tex. CD 11/16/55;

Ferguson Ready Mix Co., Perryton, Tex., LB **$97,300**. constr. compressor unit, Perryton, (TEXAS).

▲† **U. S. Eng.**, Ellington Resident Office, Galveston Dist., CE P.O. Box 5013, Ellington Air Force Base, Tex., cancelled bids to have opened Mar. 19, rectification and or imprvs. to Brays Bayou from Old Main to South Main St., and Stella Link Rd., to T&O RR., Houston, CIVENG-41-243-57-52, TEXAS. **$1,000,000-$3,000,000**. CD 2/19.

H. B. Zachry Co., P. O. Box 10188, Austin, Tex., LB **$515,465**, est. $544,491. constr. offices open mess and pool, ENG-41-443-57-15, FORT HOOD, TEX. U. S. Eng., 100 West Vickery St., Fort Worth, Tex. CD 3/26.

W. D. Faulkner, Pecos, Tex., LB **$119,250**. county park work, incl. golf course, clubhouse, SEMINOLE, TEX. Gaines Co., c/o Courthouse, Seminole, Tex. Bids Mar. 26, CD 3/25.

Krebs Constr. Co., 6649 Travis St., Houston, Tex., LB **$287,414**, permanent type concrete bleachers, temporary wood bleachers with steel frame, 4 masonry gate houses lighting facilities, appurtenances, TEXAS CITY, TEX. Texas City Independent School Dist., Texas City, Tex. Bids Apr. 4.

▲ **COLORADO**—State Hy. Dpt., 4201 E. Arkansas St., Denver,

Schmidt Constr. Co., P. O. Box 175, Arvada, Colo., CA **$1,382,466**, est. $1,390,000. grading, structures 10.561 mi. State Hy. No. 1, Colo. Proj. I 002-2 (39) El Paso Co. Bids Apr. 9. CD 4/2.

COLORADO—State Hy. Dpt., 4201 E. Arkansas St., Denver,

Smith & Lucas, Colorado Springs, Colo., CA **$996,304**, est. $1,004,000. grading, structures 10.057 mi. State Hy. No. 1, I 002-2 (45), Pueblo Co. Bids Apr. 10. CD 4/2.

† **R. D. Lowman General Contractor, Inc.**, 1617 E. Missouri St., El Paso, Tex. LB **$138,578**. Schedule A, A C & W facilities, Las Cruces Air Force Base, Continental Divide Air Force Station, Moriarty Air Force Station, ENG.-29-006-57-78, NEW MEXICO. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Mar. 19. CD 2/15.

Bradbury & Stamm, Box 1628, Albuquerque, N. M. LB **$86,713**. Schedule B. (New Mexico).

BUILDINGS—LB & CA

P. L. Richardson Co., 224 N. Gaines St., Little Rock, Ark., CA **$417,000**. 2 story, brick, concrete, steel

CHAPEL AND FINE ARTS BLDG., BATESVILLE ARK. Arkansas College, Batesville, Ark. CD 3/15.

Meisner-Anderson Co., Bismarck, N. D. LB **$502,256.** general constr. HIGH SCHOOL, MINOT, N. D. Bd. Trustees, Minot Catholic High School, Minot, N. D. Bids Mar. 28. CD 3/18.

O'Rourke Constr. Co., 1001 Commerce St., Dallas, Tex., LB **$297,500**, est. $100,000; structural steel masonry, WAREHOUSE, DALLAS, TEX. Earl M. Jorgensen Co., 2200 W. Commerce St., Dallas, Tex. Bids Mar. 26. CD 3/21.

O'Rourke Constr. Co., Box 3501, Dallas, Tex., LB Est. **$325,000**; PAINT AND VARNISH PLANT, GARLAND, TEX. Sherwin-Williams Co. of Texas, 1707 Live Oak St., Dallas, Tex., Bids Mar. 26, CD 3/21.

Construction Engineers Co., 700 Rosine St., Houston, Tex., CA **$444,995**. LAMAR TERRACE ELEMENTARY SCHOOL, HOUSTON, TEX. Houston Independent School Dist., 1300 Capitol St., Houston, Tex. Bids Apr. 4. CD 3/15.

Wm. R. Craig, 1214 Basse Rd., San Antonio, Tex., CA **$368,000,** 42,000 sq. ft. masonry, concrete steel SHOPPING CENTER, 2815 Hillcrest, San ANTONIO, TEX. Hillcrest Shopping Center, Inc., c/o Hessen & May, archts., 148 W. Olmos Dr., San Antonio, Tex., CD 4/10.

FAR WEST

HEAVY CONSTRUCTION—BA

Calif., Los Altos—BA 5/7—City, c/o City Clerk, City Hall, sewage projects, $425,000. Plans deposit $20. Brown & Caldwell, 66 Mint St., San Francisco, Calif., engrs. CD 5/23.

Calif., Pomona—ATHLETIC FACILITIES, etc.—BA 5/8—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, athletic facilities and utilities, physical education facilities, site development-partial, California State Polytechnic College, Kellogg Campus. $263,500. Plans deposit $50. CD 4/24/56, under Public Bldgs.

† **Oregon**—BA 5/15—U. S. Eng., City-County Airport, Walla Walla, Wash., supplementary spawning channel McNary Dam, Umatilla Co., CIVENG. 45-064-57-75. Myron E. Page, Jr., c/o owner, engr. CD 12/4/52.

† **California**—PRESSURE REDUCING STATIONS, etc.—BA 5/22—Bureau Reclamation, Dpt. Interior, Oak View, modifications of pressure reducing stations and meter stations along pipe-line distr. sys., Cachuma Proj. near Santa Barbara, Spec. DC-4894, adv. ENR 4/25. CD 9/4/56, under Earthwork, Waterways.

BUILDINGS—BA

Calif., Fresno—ENGINEERING—BA 5/7—State Div. Architecture, 1120 N. St., Sacramento, 1 story with belled concrete caissons, rein.-con. precast concrete panels, engineering bldg. $499,400. Plans deposit $50. CD 4/24/56.

Calif., Corona—HOSPITAL, etc.—BA 5/8—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, 1 story, 4,730 sq. ft. tuberculosis hospital addn. at California Institute for Women, and 8 separate 1 story, 1,486 sq. ft. inmate cottage wings addn. $588,150. Plans deposit $50. CD 4/24/56.

▲ **Calif., San Diego**—HEALTH CENTER—BA 5/8—San Diego Co., 1600 Pacific Hy., San Diego, 3 story, rein.-con. Public Health Center Bldg. $1,231,500. **CD 3/22/55.**

▲ **Calif., Palo Alto**—HOSPITAL AND REHABILITATION BLDG., etc.—BA 5/10—Stanford University, Palo Alto, and City of Palo Alto, City Hall, rein.-con. structural steel central hospital core and nursing wings, Stanford University Campus, $9,000,000. Hall, Pregnoff & Matheu, 251 Kearny St., San Francisco, Calif., engr; 3 story, rein.-con. rehabilitation center bldg., Stanford University Campus, $800,000, Edward B. Stone, 635 Bryant St., archt., both projects. CD 12/13, under CA.

▲ **Calif., Del Paso Heights**—BUILDINGS—BA 5/14—American River Junior College Dist., 1333 Grand Ave., various bldgs. at college. $1,800,000. Plans deposit $80. Barovetto & Thomas, 718 Alhambra Blvd., Sacramento, archts. CD 5/28.

▲ **Calif., Los Angeles**—FINE ARTS, etc.—BA 5/15—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, fine arts bldg., industrial arts bldg. and site development at Los Angeles State College of Applied Arts & Sciences, San Bernardino Freeway Campus, 157,000 sq. ft. floor area. $2,658,800. Plans deposit $100.

▲ **Calif., Pomona**—CLASSROOM UNIT, etc.—BA 5/15—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, 2 story, Type I Classroom Unit, one story metal covered shop units, wind tunnel and test cell, 3,500 sq. ft. in area and 2 small structures, 320x135 sq ft. for engineering bldg., California State Polytechnic College, Kellogg Campus, $1,649,000. Plans deposit $50. CD 4/24/56.

BUILDINGS—SLC

Calif., La Habra—WAREHOUSE—Alpha Beta Food Markets, 1111 Fullerton Rd., soon lets contract, 22,000 sq. ft. laminated wood girders, tilt-up. concrete warehouse, $100,000. Novikoff Engineers, 7617 Crenshaw Blvd., Los Angeles, engrs.

HEAVY CONSTRUCTION—LB & CA

▲† **Merritt-Chapman & Scott Corp.**, 261 Madison Ave. New York, N. Y., LB **$107,955,122**, est. $135,608,170 Glen Canyon Dam and Power House, Colorado River Storage Proj., Spec. 4825, ARIZONA, NEVADA AND UTAH. Bureau Reclamation, Dpt. Interior, Kanab, Utah. Bids Apr. 11. CD 3/19.

† **Kitchell Phillips**, 1706 W. Buchanen, Phoenix, Ariz., CA **$853,100**, shop armament and electronics bldg.,

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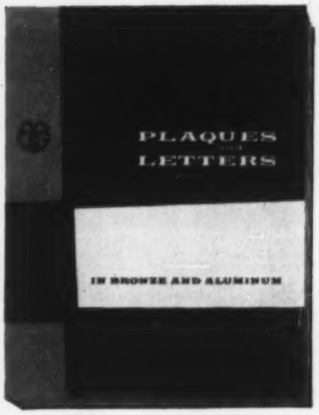

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misc. facilities, Williams Air Force Base, ENG-04-353-57-56, CHANDLER, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 3. CD 4/10, under LB.

† **The Helmick Co.**, 24300 Pacific Hy., Seattle, Wash., LB **$127,137** (9 bidders) clearing right of way and constr. access roads, Sch. 1, Olympia-Aberdeen 115-kv line No. 1, Thurson and Grays Harbor Counties, WASHINGTON. Bonneville Power Admin., 1001 N.E. Lloyd Blvd., Portland, Ore. Bids Apr. 4. CD 3/14.

D. Diamond Corp., 2839 S.W. 2 Ave., Portland, Ore., LB **$173,985** (7 bidders) cargo shed at Terminal No. 1. PORTLAND, ORE. Portland Dock Comn., 3070 N.W. Front St., Portland, Ore. CD 5/26/54.

Irby Constr. Co., 817 S. State St., Jackson, Miss., CA **$740,140** (7 bidders) 253 mi. electric distr. line and sub-station, proj. California 39A & 39B, Twenty-nine Palms, CALIFORNIA. Desert Electric Co-Operative Inc., 6480 Desert Queen Ave., Twenty-nine Palms, Calif. Bids Apr. 3. CD 4/3.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles. Bids opened Apr. 11.

Calif.—**J. E. Haddock, Ltd.**, 3538 East Foothill Blvd., Pasaduna, Calif., LB **$3,742,457** (7 bidders) grading and paving 5 mi. 4 and 6 lane freeway between Conejo Grade Summit and 5th St., in Camarillo and constr. 4 structures, Ventura Co.;

Calif.—**Griffith Co.**, 1060 S. Broadway, Los Angeles, Calif., LB **$1,695,513** (7 bidders) grading, paving 0.8 mi. 6 and 8 lane divided freeway and constr. interchange structures at Fairmount Ave. on U. S. 80 in San Diego, San Diego Co. CD 3/15.

S. J. Amoroso Constr. Co., 2100 Oakdale Ave., San Francisco, Calif., CA **$954,856** (7 bidders) constr. toll plaza bldgs., addns., alterations, incl. altering administration and shops bldg., new rein.-con. maintenance bldg., center portion 40x61 ft., two 1 story, 61x120 ft. steel metal frame wings, gas station, etc., San Francisco-Oakland Bay Bridge, City of Oakland, Alameda Co., CALIFORNIA. State Div. Architecture, 1120 N. St., Sacramento, Calif. Bids Apr. 2. CD 4/9, under LB.

▲† **McDonald & Cruse**, 7540 Wheatland St., Sun Valley, Calif., LB **$3,226,471** (5 bidders) imprv. Walnut Creek inlet channel Big Dalton Wash to San Gabriel River, ENG-04-353-57-36, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 11. CD 3/18.

G. Vella Constr. Co., 1212 E. Huntington Dr., Duarte, Calif. LB **$703,614**, est. $798,900 (10 bidders) Hollydale B Storm Drain, Bond Issue Proj. 20, Downey, LOS ANGELES, CALIF. Los Angeles Co. Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Apr. 5. CD 3/11.

Alameda Co., c/o Clerk, Courthouse, Oakland, Calif., rejected bids Mar. 28. 60,000 sq. ft. HORSE BARNS, L&V Terminal, Fremont, PLEASANTON, CALIF. LB **$163,983**. CD 4/8, under LB.

▲† **Gordon H. Ball**, 300 Camille Ave., Danville, Calif., LB **$7,821,923**, est. $8,556,466 (5 bidders) Schedule A, concrete runway exten. and widening for landing jet bombers at Mather Air Force Base, ENG-04-167-57-40, SACRAMENTO, CALIF. U. S. Eng., 1209 8th St., Sacramento, Calif. Bids Apr. 12. CD 3/12; **Peter Kiewit Sons Co.**, 442 Post St., San Francisco, Calif. LB **$7,898,955**, est. $8,883,866 (5 bidders) Schedule B concrete runway exten., etc. (Sacramento, Calif.)

▲ **N. P. Valkenburgh**, 1627 N. Chico St., El Monte, Calif., LB **$1,365,320** (5 bidders) constr. Switzer Creek Storm Drain from Balboa Park to San Diego Bay, SAN DIEGO, CALIF. City, Civic Center, 1600 Pacific Hy., San Diego, Calif. Bids Apr. 10. CD 3/14.

Paul W. Wasson, 800 Pinedale Court, Hayward, Calif., CA **$123,441** (10 bidders) sanitary sewers, appurtenances, Imprvt. Dist. No. 33, near WALNUT CREEK, CALIF. Central Contra Costa Sanitary Dist., 1250 Springbrook Rd., Walnut Creek, Calif. CD 8/13.

BUILDINGS—LB & CA

Gale Roberts, 338 W. 11 Ave., Eugene, Ore. CA **$545,127**. (7 bidders) JUNIOR HIGH SCHOOL, SPRINGFIELD, ORE. Springfield School Dist. Springfield, Ore. Bids Mar. 4.

▲ **Koppers Co., Inc.**, Koppers Bldg., Pittsburgh 19, Pa. CA **$10,000,000**. 2 coke oven batteries and extending COAL CHEMICAL PLANT, at Kaiser Steel Corp. plant, FONTANA, CALIF. Kaiser Eng. Div., Henry J. Kaiser Co., 1924 Broadway, Oakland, Calif. CD 4/15.

▲ **Harris Constr. Co.**, P. O. Box 109, Fresno, Calif. CA **$3,319,025** (base bid plus alternates) 4 story, bsmnt., 128,000 sq. ft., 243 bed steel, concrete HOSPITAL addn., incl. ward, kitchen, nursery, etc., FRESNO, CALIF. Fresno Community Hospital, 1234 "S" St., Fresno, Calif. Bids Mar. 28. CD 4/3, under LB.

Mead & O'Donnel, 7769 Melrose Ave., Los Angeles, Calif. CA **$593,542**. frame stucco PATRICK HENRY JUNIOR HIGH SCHOOL, North Hollywood, Granada Hills, LOS ANGELES, CALIF. Los Angeles Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Apr. 3. CD 4/11, under LB.

O. K. Earl Jr., 3400 E. Foothill Blvd., Pasadena, Calif., CA **$116,000**. 24,075 sq. ft. concrete MFG. BLDG., 210 S. Railroad St., MONROVIA, CALIF. Acme Appliance Mfg. Co., 35 S. Raymond St., Pasadena Calif., Frank O. Bigelow, 3400 E. Foothill Blvd, Pasadena, Calif., engr.

Wayne Pendergraft, 21708 Alcazar Ave., Cupertino, Calif., CA **$550,012** (13 bidders) INTERMEDIATE SCHOOL, MOUNTAIN VIEW, CALIF. Mountain View, School Dist., c/o supt. Mountain View, Calif. Bids Apr. 4, awarded Apr. 8. CD 4/12, under LB.

Dinwiddie Constr. Co., 620 Market St., San Francisco, Calif., CA **$881,993**. CONTROL LABORATORY, RODEO, CALIF. Union Oil Co. of California, 617 W. 7th St., Los Angeles, Calif. Awarded Apr. 3. CD 4/11, under LB.

Harrod & Williams, 290 S. Murphy Ave., Sunnyvale, Calif., CA **$642,824**. one story, bsmnt. under 1 wing, 25,000 sq. ft., 1st floor and 6,000 sq. ft. bsmnt., pre cast concrete CITY HALL, SUNNYVALE, CALIF. City, City Clerk, City Hall, Sunnyvale, Calif. CD 3/26, under LB.

Olsen Constr. Co., 125 Brockwood Rd., Santa Rosa, Calif., CA **$691,871**. frame, stucco constr. WILLITS HIGH SCHOOL addn. and remodel existing bldg., WILLITS, CALIF. Willits Union High School Dist., c/o Supt., Willits, Calif. Bids Mar. 27. CD 4/4, under LB.

CANADA

HEAVY CONSTRUCTION—BA

N. S., **McNabs Island**—BA 5/8—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., breakwater repairs, Mauger Beach. $200,000.

† **Quebec**—BA 5/22—St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont., regulating works and roadway underpass, St. Lambert Lock, Lachine section of Seaway. A. G. Murphy, c/o owner, 685 Cathcart St., Montreal, Que., ch. engr.

BUILDINGS—BA

▲ **Que., Montreal** — OFFICE SUPERSTRUCTURE — BA 4/29—Monart Corp., c/o Greenspoon, Freedlander & Dunne, archts., 4151 Sherbrooke St. W., superstructure for 17 story, 4 bsmnt., rein.-con. frame, stone facing office bldg. Guy and Dorchester Sts. $3,500,000. Pierre M. d'Allemagne, 3180 Van Horne Ave., engr.

Ont., Ottawa—FINANCE—BA 5/8—Dpt. P. Wks., Hunter Bldg., Ottawa, finance bldg., Tunney's Pasture. Over $350,000. Plans deposit $150.

BUILDINGS—SLC

Ont. **Hamilton**—PLANT—Building Products Ltd. 70 Beach Rd., soon lets contract, 1 story, 116x303 ft. steel, concrete block plant. $225,000. Wr. R. Souter & Assocs., 36 James St. W., Hamilton, archts.

HEAVY CONSTRUCTION—LB & CA

Nelson River Constr. Ltd., 101 Dawson Rd., Winnipeg, Man., LB **$761,266**. new runway about 5,700x1,200 ft. and building up and reconstr. existing taxiways at airport, BRANDON, MAN. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids Apr. 4. CD 3/27.

▲ **Stone & Webster**, 90 Broad St., New York, N. Y., U.S.A. CA Total est. **$32,000,000** design and construct, Richard L. Hearn Generating Station unit, incl. four 200,000 kw units, ONTARIO. Ontario Hydro-Electric Power Comn., 602 University Ave., Toronto, Ont. CD 1/10/56.

Miller Paving Ltd., 56 Blake St., Toronto, Ont., CA **$496,245** (15 bidders) subgrade preparation and paving; CA **$186,158** (15 bidders) about 11 mi. 4 and 5 ft. wide concrete sidewalks, KAPUSKASING, ONT. Town, Town Hall, Kapuskasing, Ont. Bids Apr. 1, awarded Apr. 8. CD 3/14.

BUILDINGS—LB & CA

▲ **Burns & Dutton Concrete & Constr. Co. Ltd.**, 5440 1 St. S. W., Calgary, Alta., LB **$2,500,000** (8 bidders) 2 story, rein.-con. brick SCHOOL, Provincial Institute of Technology & Art, CALGARY, ALTA. Dpt. P. Wks., Parliament Bldgs., Edmonton, Alta. Bids Mar. 28. CD 3/1.

T. A. Andre & Sons Ltd., 580 Brock St., Kingston, Ont. CA Est. over **$200,000**. 1 story, 135x230 ft. structural steel, concrete block BOTTLING PLANT and OFFICE, Railway and Patrick Sts., KINGSTON, ONT. Coca-Cola Ltd., 90 Broadview Ave., Toronto, Ont. Mathers & Haldenby, 15 St. Mary St., Toronto, Ont., archts. Awarded Apr. 3.

Milne & Nicholls Ltd., 57 Bloor St. W., Toronto, Ont., CA **$759,307**, 3 story, bsmnt. JAIL, WHITBY, ONT. Ontario Co., Box 550, Whitby, Ont. Wallace, Carruthers & Assoc. Ltd., 92 Yorkville Ave., Toronto, Ont., engrs. Awarded Apr. 5. CD 6/27/55.

▲ **J. L. Guay & Frere Ltd.**, 6900 Cote de Nieges Rd., Montreal, Que., Est. **$10,000,000**. 400-bed, 7 and 8 story MENTAL HOSPITAL, Route Nationale L'ANNONCIATION, QUE. Hospital of the Laurentides, c/o Lucien Byre, L'Annonciation and Provincial Health Dpt., Quebec Cty, Que. Awarded Feb. 14. CD 6/20.

▲ **J. H. Dupuis Ltd.**, 4324 Jeanne d'Arc St., Montreal, Que., CA **$1,280,000** (9 bidders) 7 story, bsmnt., 150x217 ft., rein.-con., stone, brick COLLEGE expansion, incl. swimming pool, gymnasium, auditorium, 60 rooms, recreation hall, etc. MONTREAL, QUE. Peres Ste. Croix, College Notre Dame, 3745 Queen Mary Rd., Montreal, Que. Awarded Apr. 4. CD 2/19.

ALASKA

BUILDINGS—LB & CA

▲† **Raber and Kief B-E-C-K Constructors, Inc.**, 420 Queen Anne Ave., Seattle, Wash., LB **$1,100,203** (2 bidders) LAUNDRY and DRY CLEANING PLANT, at Naval Station, ADAK, ALASKA. Seventeenth Naval Dist., 215 W. Harrison St., Seattle, Wash. Bids Apr. 9. CD 3/21.

LATIN AMERICA

BUILDINGS—LB & CA

Pan American Constr. Co., **6120** Eastern Parkway, Baltimore, Md., U.S.A. CA Est. **$700,000**. sulphuric acid PLANT, CUAUTITLAN, MEXICO. Guanos y Fertilizantes.

AMERICANS ABROAD

BUILDINGS—BA

† **Spain, Rota**—BARRACKS—BA 5/2—Bureau Yards & Docks, Dept. Navy, 18 St. and Constitution Ave. N.W., Wash. 25, D. C., U. S. A., enlisted men's barracks, (Spanish contractors only), Spanish Air Base Program ROT-48.

HEAVY CONSTRUCTION—LB & CA

▲ **Chemical Constr. Corp.**, 525 W. 43 St., New York 36, N. Y., U.S.A., design and construct, AMMONIA PLANT, Honshu Island, JAPAN. Befu Chemical Co. Ltd., Honshu Island, Beful, Japan.

FOREIGN

HEAVY CONSTRUCTION—BA

Iraq—BA 5/15—Ministry of Development, Govt. of Iraq, Development Bd., Baghdad, Contr. No. SPA-7 (1957) land development, incl. access and internal roads, water supply and installations for electricity distr. net works of Housing Scheme in Sector 2 at Mosul, Iraq.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Colo., Boulder**—City, City Hall, water system expansion, **$1,500,000-$3,000,000**. CD 6/16/53.

Minn., Island Park (P. O. Mound)—Village, M. Love, mayor, water supply sys., incl. deep well, ground storage tank and elevated storage tank, 14 mi. water main. **$550,000**. Schoell & Madson, 8134 Minnetonka Blvd., Minneapolis, consult. engrs.

SEWERS, WASTE DISPOSAL

▲ **Calif., Laguna Beach**—Laguna Beach City Council, City Hall, defeated bonds Mar. 29, finance development and expansion sewage facilities. **$1,300,000**. James M. Montgomery, 535 E. Walnut St., Pasadena, consult. engr. CD 2/26.

▲ **Minn., South St. Paul**—City, J. F. O'Donnell, recdr. voted **$1,300,000** bonds Apr. 2, storm and sanitary sewers, 13 mi. sewer 18 to 78 in.

Massachusetts—Commonwealth of Mass., Metropolitan Dist. Comn., 20 Somerset St., Boston, drainage in connection with constr. relocated Rte. 28, Medford. **$300,000**. Constr. in 1957.

N. J. Asbury Park—City, reconstr. trunk sewer and connections, **$615,690**.

Okla., Claremore—City, defeated bonds Apr. 2, sewage disposal plant, **$511,000**. Black & Veatch, 1500 Meadow Lake Parkway, Kansas City 14, Mo., consult. engrs. CD 3/13.

▲ **Alta., Edmonton**—City, City Hall, 22,000 ft. intercepting tunnel sewer. **$2,200,000**. Bids in April.

BRIDGES

CONNECTICUT—State Hy. Dpt., 165 Capitol Ave., Hartford;

New London Co.—22 ft. span, 56 ft. wide Laurel Hill Bridge over, N. Y., N. H. and H. RR., Route 12, Norwich. **$510,000**. Bids in 1957.

STREETS AND ROADS

▲ **ALABAMA**—State Hy. Dpt. Montgomery, Zone 4,

Mobile Co.—6-lane expressway from Nauvo to entrance of Bankhead Tunnel and new tunnel under Mobile River, Mobile. **$50,000,000**. Palmer & Baker, Inc., 957 Springhill Ave., Mobile, consult. engr.

N. J., Morristown—Bd. Freeholders Morris Co., Court House, repaving Columbia Rd., Morris Twp., Ridgedale Ave., Florham Park, Morris St. Dover and Riverdale Rd., Riverdale. **$560,000**. Robert L. Curtis, Court House, engr.

Texas—Hopkins Co., Sulphur Springs, defeated bonds Apr. 2, 250 mi. rural road surfacing thruout county, **$750,000**. CD 3/15.

▲ **QUEBEC**—Provincial Roads Dpt., Quebec City,

Ste. Anne de la Perade—constr. about 40 mi. Route No. 2 to bypass Ste. Anne de la Perade. **$2,000,000**.

EARTHWORK, WATERWAYS

▲ **Calif., Santa Ana**—Bd. Supervs.—Orange Co., Court House, Santa Ana,

FLOOD CONTROL PROJECTS

Paularino Channel, F-3, **$147,000**,

Los Alamitos Channel, C-1, **$771,750**,

Santa Ana Delhi Flood Control Channel, F-1, **$387,100**,

Santa Ana Grdens, F-2, **$245,000**. Boyle Eng. Co., Spurgeon Bldgs., Santa Ana, Calif., consult. engr. CD 7/3.

AIRPORTS

Conn., Windsor Locks—TERMINAL—State P. Wks. Dpt., 165 Capitol Ave., Hartford, plans by Phelps Barnum, 250 Park Ave., New York, N. Y. 2 story, 20,000 sq. ft. 57x85 ft. Murphy Terminal Bldg. addn., Bradley Field, **$550,000**. Stewart W. Thompson, 250 Park Ave., New York, N. Y., consult. engr. CD 11/20.

LATIN AMERICA

Colombia—LINE—Colombian Petroleum Co., Rio de Oro, plans 42 mi. 6 in. line Tibu Field to Rio de Oro. **$310,000.**

▲ **Mexico, Madero**—CATALYTIC CRACKER UNIT—Madero Refining Co., Madero, plans 20,000 bbl. catalytic cracker unit. **$3,000,000.**

▲ **Venezuela**—CRUDE LINES—Creole Petroleum Co., Caracas, plans 37 mi. 30 in. crude line Temblador to Caripoto, **$4,350,000**; 9 mi. 26 in. crude pipe line Ule to LaSalina, **$210,000.**

PUBLIC BUILDINGS

▲ **Ark., North Little Rock**—HOSPITAL—City, Mayor A. C. Perry, City Hall, Plans by Swain & Allen, Gazette Bldg., Little Rock, hospital, **$2,177,585**. CD 3/12.

Ark., Pine Bluffs—SCHOOLS—Bd. Educ., H. F. Diel, supt. Schools, Pine Bluff, Plans by Cardwell, Rowlett & Scott, 1611 N. Broadway, Oklahoma City, Okla., and Reed & Wills, National Bldg., Pine Bluff, assoc. archts., 1 story, 43,000 sq. ft., rein.-con., brick Southeast Junior High School, over **$350,000** and 1 story, 40,000 sq. ft. brick, rein.-con. Southwest Junior High School, over **$350,000**. CD 8/5/52.

▲ **Calif., Alhambra**—SCHOOLS—Alhambra High School Dist., 308 W. Main St., **$5,769,000** bond election June 4, high schools. CD 2/12.

▲ **Calif., Alhambra**—SCHOOLS—Alhambra City Elementary School Dist., 601 N. Garfield Ave., **$3,627,000** bond election June 4, schools. CD 2/12.

Calif., Lindsay—GYMNASIUM—Lindsay Unified School Dist., c/o Supt., 250 N. Harvard Ave., bond election May 28, gymnasium. **$360,000.**

Calif., Oakland—SCHOOL—Oakland City Unified School Dist., c/o Supt., 1025-2nd Ave., plans by George A. Ellenger, 1801 Casterline Rd., and Roland Gibbs, 5359 College St.. frame, stucco Allendale Elementary School and demolition of existing school, 3720 Penniman Ave. **$575,000**. CD 10/26.

Calif., Riverside—SHOP, etc.—University of California, Riverside Campus, Riverside, plans by Allison & Rible, 3670 Wilshire Blvd., Los Angeles, shop, storage and service Bldgs., 1st units in corporation yard for Dpt. of Bldgs. and Grounds, **$325,000**. CD 5/18/55.

Colo., Boulder—LAW SCHOOL—University of Colorado, Campus, Boulder, Colo., plans by Trautwein & Howard, 1411 Walnut St., Phila., Pa., and Robert Berne, assoc. archt., 718 Security Bldg., Denver, law school bldg. **$850,000**. CD 10/18.

▲ **Conn., Easton and Redding**—SCHOOL—Towns of Easton and Redding, Regional School Study Comn., Easton, plans by Richard L. Howland, 7 S. Main St., West Hartford, regional high school for Easton and Redding. **$1,000,000**. CD 7/19.

▲ **Conn., Hamden**—SCHOOLS—Town, Town Hall, Hamden High School addn. **$1,200,000**; new high school **$2,800,000.**

▲ **Conn., Hartford**—SCHOOL—Town, Town Hall, plans by Malmfeldt Assocs., 36 Pearl St., high school to replace Hartford High School on Forrest St., **$4,500,000.** Winfred W. DeMay, city engr. A. John Macchi, 57 Farmington Ave., engr. for site. CD 1/23.

Ill., Joliet—SCHOOL—City, City Hall, plans by Skidmore, Owings & Merrill, archts., 100 W. Monroe St., Chicago, 1 story, concrete block, Joliet Township High School addn., Collins and Van Buren Sts. **$937,000.**

▲ **Ill., Springfield**—SCHOOLS—City, City Hall, voted **$1,960,000** bonds Apr. 2, two Junior High Schools. CD 3/7.

Iowa, West Liberty—SCHOOL—Bd. Educ. voted **$395,000** bonds Mar. 11, Junior-Senior High School.

▲† **Ky., Fort Campbell**—HOUSING—U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn., plans by Brush, Hutchison & Gwinn, 1609 Church St., Nashville, Tenn., 1 story 760 housing units, (Capehart). **$10,000,000.** Bids in June. CD 12/10.

Ky., Louisville—SCHOOL—Jefferson Co. Bd. Educ., 618 W. Jefferson St., plans by Harstern, Louis & Henry, McDowell Bldg., Greenwood Elementary School. **$701,490**. E. R. Ronald & Assoc., 554 S. Third St., consult. engrs.

▲ **Ky., Louisville**—OFFICE—State, Div. Purchases & Pub. Property, Frankfort, plans by Meriwether Marye & Assoc., 248 E. Short St., Lexington, 2- 3 story, 150x200 ft. brick office air-conditioned, for Dpt. Economic Security, Magazine St. between Eighth and Ninth Sts., **$1,000,000**. Proctor-Ingels, 915 S. Limestone St., Lexington, mech. engrs. CD 5/1.

Me., Biddeford—SCHOOL—City, Paul Larrabee, supt. Schools, City Hall, Junior High School and elementary school. **$300,000-$350,000**. Constr. 1957-58.

▲ **Md., Baltimore**—SCHOOL—City, Bureau Bldg. Constr. 410 Municipal Bldg., Zone 2, plans by Tyler, Ketcham & Myers, 513 Park Ave., Zone 1, 4 story, brick City Springs Junior High School, Caroline, Bethel, Lombard and Pratt Sts., **$2,000,000**. R. E. L. Williams, bldg. constr. engr. CD 11/9.

▲ **Mass., Boston**—CIVIC AUDITORIUM—City, City Hall, plans by Hoyle, Doran & Berry, 248 Boylston St., civic auditorium, Prudential Center site, **$12,000,000.** To go ahead in 1957-1958. CD 1/30.

Mass., North Reading—SCHOOL—Town, William E. Doten, chn. Bldg. Comn., School Dpt., plans by Stoner Assoc., 53 State St., Boston, elementary school. **$350,000**. Constr. in 1958.

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Mich., Harper Woods—CIVIC CENTER—City, Marie T. Baron, clk., defeated **$350,000** bonds Apr. 1, civic center bldgs., library and community center. CD 3/6.

Minn., Brooklyn Center—SCHOOL—Bd. Educ., School Dist. No. 118, E. E. Johnson, clk., voted $385,000 bonds Apr. 1, expansion of existing school. **$360,000,** Shifflet, Backstrom, Hutchison & Dickey, Inc., 17 W. Franklin Ave., Minneapolis, archt. Constr. in 1957. CD 1/26/56.

Minn., Fridley—SCHOOL—Bd. Educ., Mrs. Christine Gerrety, clk., Independent School Dist. No. 23, voted $500,000 bonds Mar. 29, grade school. **$350,000, Magney, Tusler & Setter,** 303 Roanoke Bldg., Minneapolis, archts.

Minn., Lake Benton—SCHOOL—Bd. Educ., F. Monahan, clk., voted $525,000 bonds Mar. 26, addn. to and remodelling public school, **$500,000.** Swanson & Wegleitner, 500 Sexton Bldg., Minneapolis, archts.

▲ **Minn., Waseca**—SCHOOL—Bd. Educ., E. C. King, clk., defeated **$2,350,000** bonds Apr. 2, two elementary schools, high school addn., etc. CD 3/28.

Mo., Hazelwood (St. Louis P.O.)—SCHOOL—School Dist. of Hazelwood R-1, St. Louis Co., Bd. Educ., Clifford Kirby, supt. Schools, 1865 Hy. 66, St. Louis County, Zone 15, defeated **$500,000** bonds Apr. 2, elementary school, Howdershell Rd., expansion of Lusher and Elm Grove Schools. CD 2/13/56.

▲ **Mo., Kansas City**—SCHOOL—Center School Dist., 85 and Woodland Sts., voted bonds Mar. 5, Junior High School South of 97 St. between Holmes and Wornall Sts. **$1,150,000.** Marshall & Brown, 1016 Baltimore Ave., Kansas City, Mo., archts.

Mo., St. Louis County—SCHOOL—School Dist. R8, St. Louis County, Bd. Educ., Noah Gray, supt., 4900 S. Lindbergh Blvd., Zone 23, plans by Charles W. Lorenz, 700 N. Ballas Rd., Rte. 13, Box 1378, Kirkwood, Zone 22, Senior High School addn., 4900 S. Lindbergh Blvd. **$750,000.** CD 4/10.

▲ **Mo., University City (St. Louis 5 P. O.)**—SCHOOL—School Dist. of University City, Bd. Educ., Dr. Robert L. Gilchrist, supt. Schools, 5701 Delmar Blvd., Zone 5, voted **$2,200,000** bonds Apr. 2, school, school addns., imprvs. CD 1/24.

Mo., Warrensburg—SCHOOL—Bd. Educ., Warrensburg, defeated $670,000 bonds Mar. 28, 1 and 2 story high school. **$725,000,** Dan R. Sandford & Sons, 800 Westport Rd., Kansas City, Mo., archts. CD 3/5.

Mo., Webster Groves (St. Louis 19 P. O.)—SCHOOL—Bd. Educ., School Dist. of Webster Groves, Charles E. Garner, supt. Schools, 16 Selma Ave., voted **$825,000** bonds Apr. 2, elementary school, Bennett Ave. north of Manchester Rd. in Warson Woods; addns. to Edgar Rd., Avery, Bristol and Goodall Elementary Schools, etc.

Mont., Deer Lodge—SCHOOL—Deer Lodge High School Dist., Deer Lodge, vocational, agricultural and industrial arts high school, **$700,000.** Bonds voted.

▲ **Neb., Fremont**—SCHOOL—Bd. Educ., voted **$1,550,000** bonds Apr. 2, Senior High School. CD 3/14.

▲ **Neb., Omaha**—SCHOOL—Bd. Educ., 3902 Davenport St., North Side Junior High School, **$2,000,000.** CD 11/28/55.

N. H., Durham—DORMITORY—University of New Hampshire, Thompson Hall, plans by Irving W. Hersey Assoc., Town Hall, men's dormitory, **$350,000.** Constr. in 1957-58.

N. H., Laconia—SCHOOL—City, School Bd., Laconia, plans by Alonzo J. Harriman, Inc., 292 Court St., Auburn, Me., elementary school, Bond Park, Lakeport. **$371,000.**

N. J., Moorestown—SCHOOL—Moorestown Twp. Bd. Educ., plans by Petty & Croft, 39 E. Main St., school addn., Stanwick Ave. **$344,000.**

N. Y., Hilton—SCHOOL—Hilton Central School Bd., Hilton, Junior Senior High School addn. **600,000.**

▲ **N. Y., Rochester** — HIGH SCHOOL — Greece Central School Dist., Hoover Dr., high school. **$3,530,000.**

▲ **N. Y., Rush**—SCHOOL—Rush-Henrietta School Dist., Chas. H. Roth Sr., pres., Rush, bond election May 7, elementary school and junior high school. **$3,846,000.**

O., Columbus—WORKHOUSE—City, City Hall, addnl. wing to city workhouse. **$350,000.**

▲ **O., Dayton**—SCHOOL—Bd. Educ., 348 W. First St., plans by Yount, Sullivan & Lecklider, 3rd Natl. Bldg., Nettie Lee Roth High School, **$2,500,000.** CD 3/22.

O., Ironton—SCHOOL—Rock Hill Local School Dist. Ironton, bond election May 7, school. **$637,000.** CD 11/19.

O., Marion—HOSPITAL—Marion General Hospital, McKinley Park Dr., hospital addn., expanding parking facilities, small maintenance bldg. **$750,000.**

O., Youngstown—SCHOOL—Youngstown Bd. Educ., 20 N. Wood St., plans by Paul Boucherle, 222 E. Rayen St., Kimmel Brook School. **$600,000.** Bids in July. CD 3/14.

† **Okla., Shawnee**—POST OFFICE, etc.—General Services Admin., General Services Bldg., Wash. 25, D. C. plans by Branson A. Davis & Albon W. Davis, Shawnee, U. S. Post Office exten., remodeling. **$830,000.**

▲ **Ore., Toledo**—SCHOOLS—Lincoln Co. Court House, approved **$1,183,000** building levy Mar. 29, school construction incl. new high school at Waldport, and new high and elementary schools at Newport.

Pa., Westtown—SCHOOL—West Chester Joint High School Bd., plans by Howell Lewis Shay & Assocs., Packard Bldg., Phila., Junior High School. **$750,000.** CD 7/30.

R. I., Burrillville—SCHOOL—Town, School Dpt., Elementary School, Harrisville, plans by Fraser & Henthorne, 49 Westminster St., Providence, elementary school. **$350,000.** Constr. in 1958.

▲ **Tex., Houston**—PROBATION HOME, etc.—Harris Co. c/o Comrs. Court, Courthouse, plans by Pierce & Pierce, 2200 Welch St., probation and detention home, **$1,000,000.** CD 3/11.

▲ **Tex., Houston**—SCHOOL—Houston Ind. school Dist., 1300 Capitol, plans by Ralph M. Buffington, 1710 Welch St., Alcott Elementary School. **$450,000. Jas.** I. Stillman, 1510 Barbee St., and Jas. H. Howard & Assocs., 2728 Weslayan St., consult. engrs.

▲ **Tex., La Porte**—SCHOOLS—La Porte Independent School Dist., voted bonds Apr. 2, high school, **$1,150,000.** DeWalt Elementary and Intermediate Grade School unit addns., **$350,000.** CD 3/20.

Tex., Longview—SCHOOL—Longview Independent School Dist., Longview, plans by Kelly & Deteau, 1st National Bank Bldg., Negro Elementary School. **$375,000.** CD 10/24/55.

Tex., Silsbee—SCHOOL—Silsbee Independent School Dist., Silsbee, voted bonds Mar. 30, school. **$400,000.**

Tex., Plainview—SCHOOL—Plainview Independent School Dist., c/o Charles F. Mathew, supt., Junior High School, **$625,000.**

Tex., Pleasant Hill—SCHOOL—Pleasant Hill Independent School Dist., Rte. 5, Box 319, Austin, plans by Carl H. Stautz, 1704 Exposition St., Austin, school. **$350,000.** B. Segall, Jr., 705 N. Lamar St., Austin, engr. CD 9/19.

Tex., Vanderbilt—AUDITORIUM, etc.—Industrial Consolidated Independent School Dist., C. D. Holmes, supt., Box 350, plans by Hedrick, Stanley & Lightfoot, archts & consult. engrs., 5201 Fannin Bldg., Houston, new auditorium and school alterations, addns. at Vanderbilt-Lolita, **$350,000.** CD 3/7.

▲ **Va., Arlington**—HIGH SCHOOL—Arlington County School Bd., Arlington, high school. **$3,200,000.**

▲ **Wash., Mount Vernon**—JUNIOR COLLEGE—Union High School Dist. No. 1, Mount Vernon, $469,000 bond election May 14, five 68,000 sq. ft. Junior College buildings. **$1,000,000.** Hovind, Harthorne & Smith, 1500 Westlake Ave., N. Seattle, engrs. CD 2/4.

▲ **Wash., Seattle**—CLASSROOM, etc.—University of Washngton, Seattle, Zone 5, plans by Carlson, Eley & Grevstad, 432 Eastlake Ave., classroom and office. **$2,115,000.** To go ahead this year. CD 3/21.

Wash., Tacoma—SCHOOL—School Bd., S 8 and Tacoma Sts., plans by E. J. Bresemann, Perkins Bldg. and G. Wojahn, 6 N. Tacoma St., renovating Stadium High School. **$850,000.** CD 11/20.

▲ **Wis., Milwaukee**—SCHOOLS—City, City Hall, voted bonds **$39,000,000** bonds, schools.

▲ **Wyo., Sheridan**—COLLEGE—Northern Wyoming Community College, 6th and Saberton, bond election May 11, college addn. **$1,000,000.** CD 3/29.

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Que., Forestville—SCHOOL—LaCommission Scolaire de Forestville, Forestville, plans by Parent-Moranville, Haute Rive, Saguenay Co., 1 story, bsmnt., 60x132 ft., school and alterations to existing school to provide a residence. **$350,000.** Paul Laberge, LaMalbaie, consult. engr.

Que., Lachine—SCHOOL—LaCommission Scolaire Catholique de Lachine, 110 15 Ave., plans by Paul M. Lemieux, 1846 Dorchester St. W., Montreal, and Jean F. Morin, 1532 St. Joseph St., Lachine, high school and residence. **$500,000.**

COMMERCIAL BUILDINGS

Calif., San Rafael—DORMITORY—Dominican Order, c/o Schubart & Friedman, archts., 52 Vallejo St., San Francisco, 2 story, 31,800 sq. ft. dormitory bldg. at Dominican College, incl. chapel and lounges, **$400,000.**

Calif., Vallejo—CHURCH—Roman Catholic Church, Archbishop of San Francisco, 445 Church St., San Francisco, plans by Ryan & Lee, 305 Grant Ave., San Francisco, rein.-con. St. Basil's Church, Nebraska and Tuolumne Sts., **$400,000.** CD 2/2/51.

▲ **Conn., Bridgeport**—OFFICE—Southern New England Telephone Co., 227 Church St., New Haven, branch office bldg. **$4,194,000.**

Conn., Hartford—OFFICE—Hartford Federal Savings & Loan Assoc., 50 State St., demolish Princess Theatre Bldg., 58 State St. and erect 5 story, 125x57 ft. addn. to main office of owner, new facade to extend across entire enlarged front, **$356,250.**

Conn., New Haven—SCHOOL—Foote School, 315 St. Ronan St., plans by E. Carleton Granberry, Jr., 110 Whitney Ave., 1 story, brick, frame elementary school, 25 campus-type bldgs., 1 classroom each. **$850,000.** Hubbard, Lawless & Blakeley, 110 Whitney Ave., consult. engrs.

▲ **Conn., New Haven**—APARTMENT—Norman W. Zaubler, 1007 Farmington Ave., West Hartford, plans by Kane & Fairchild, 734 Asylum Ave., Hartford, 714-unit apartment, Oak St. Redevelopment area, **$8,500 000.**

Conn., Shelton—SHOPPING CENTER—Daniel Beard, Shelton Ave., plans by Val. J. Carlson, 433 Howe Ave., 2 story, 100x600 ft. and 60x100 ft., stone concrete block, brick facing shopping center, concrete fdn., Huntington Ave. **$660,000.**

Conn., Stamford—MOTEL—Catherine Coughlin et als, c/o Maurice J. Buckley, atty, 300 Main St., motel, High Ridge Rd. **$750,000.**

Conn., Stamford—HOUSES—Cedar Ridge Development, Inc., High Ridge Rd., 57 houses, roads, extending from Idlewood Dr. and Little Hill Dr. **$590,000.** CD 10/3.

Conn., Stamford—APARTMENT—Harold F. Darling, Vine Rd., 69-unit apartment **$345,000.**

▲ **D. C., Wash.**—SOCIAL CENTER, etc.—Catholic University, 620 Michigan Ave. N.E., plans by Murphy & Locraft, 1518 P St. N.W., social center, **$657,000;** dormitory, **$735,000.**

▲ **D. C., Wash.**—BELL TOWER—Knights of Columbus, 71 Meadow St., New Haven, Conn., bell tower at National Shrine of Immaculate Conception. **$1,000,000.**

▲ **Fla., Coral Gables** — DORMITORY — University of Miami, Coral Gables, plans by Robert M. Little, S. Bayshore Drive, Miami, women's dormitory. **$2,695,000.** CD 3/28.

▲ **Fla., Coral Gables**—MEDICAL EDUCATION—University of Miami, medical education bldg. **$9,500,000.** CD 9/23/52.

▲ **Fla., Coral Gables**—SCIENCE, etc.—University of Miami, Coral Gables, science bldg., **$1,750,000;** engineering bldg., **$1,750,000;** library bldg., **$5,500,000.**

▲ **Fla., Palm Beach**—SHOPPING CENTER—Bessemer Properties, Inc., 465 E. 57 St., New York 22, N. Y., plans by John L. Volk, 206 Phipps Plaza, shopping center to be called Royal Poinciana Plaza on 6 acre site bounded by Royal Poinciana Way and Cocoanut Row. **$2,500,000.**

▲ **Ill., Aurora**—HOMES, etc.—West Aurora Plaza, Inc., c/o Robert G. Wolfe, atty., 111 W. Monroe St., Chicago, 1,200 homes, 100-apartment bldgs., shopping center, incl. 35 units, 464-acre tract, Galena Blvd. and Edgelawn St. **$40,000,000.**

▲ **Ill., Chicago**—HOTEL, etc.—Owner, c/o Harry George, atty., 1 N. LaSalle St., 18 Story hotel and 8 story office bldg., 600 Block South Michigan Ave. **$13,000,000.**

▲ **Ill., Chicago**—APARTMENT—Owner, c/o Leonard H. Lawrence, atty., 1036 N. Dearborn St., plans by L. R. Solomon & Assocs., 61 W. Superior St., 20 story, 126-unit apartment, 30 E. Elm St. **$2,500,000.**

Ind., Collegeville—DORMITORIES—St. Joseph's College, two dormitories. **$680,000.**

Ind., Evansville—DORMITORY—Evansville College, 1800 Lincoln St., dormitory. **$400,000.**

Kan., Wichita — FINE ARTS, etc. — Friends University, Lowell E. Roberts, interim pres., 106 E. Second St., Zone 2, fine arts bldg., gymnasium, admin. bldg. **$350,000.**

Md., Baltimore — SHOPPING CENTER — Waverly Realty Corp., c/o Albert Stark, 210 E. Lexington St., Zone 2, shopping center, 2835 Greenmount Ave. **$800,000.**

Md., Emmittsburg — DORMITORY — St. Mary's College, Emmittsburg, plans by May & Ruppert, 1308 18 St. N. W., Wash., D. C., 4 story, 45x100 ft., brick, stone, concrete, steel dormitory addn. **$600,000.** Edw. Scullen & Assocs., Bethesda, struct. engrs. W. A. Brown, 1223 Conn. Ave. N. W., Wash., D. C., mech. engr.

▲ **Mass., Boston**—STUDENT UNION—Boston University, 688 Boylston St., plans by Hoyle, Doran & Berry, 248

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Boylston St., student union bldg. **$1,000,000**. Const. 1958. CD 12/4/51.

▲ Mass., **Swampscott**—SHOPPING CENTER—Louis H. Salvage, c/o Louis H. Salvage Shoe Co., 10 High St., Boston, 678,000 sq. ft. shopping center, Paradise Rd. **$2,000,000**.

Mass., **Woburn-Winchester**—SHOPPING CENTER—Star Market Co., Stephen P. Mugar, pres., 297 Walnut St., Newton, plans by Campbell & Aldrich, 38 Newbury St., Boston, shopping center, Rte. 3, **$350,000**. Constr. in 1957.

▲ Mich., **Flint**—HOSPITAL—Flint Osteopathic Hospital, 416 W. Fourth Ave., hospital addn. **$3,537,000**. CD 8/3/50.

Mont., **Billings**—APARTMENT—Billings Co-operative Apartments, c/o F. A. Pipley, Inc., 616 Clark Ave., 6 story steel, concrete apartment, **$600,000**.

Mont., **Billings**—DORMITORY—Rocky Mountain College, Billings, 3 story dormitory. **$344,000**.

N. J., **Netcong**—SCHOOL—Archdiocese of Paterson, 24 DeGrasse St., for Parish of St. Michael, Netcong, plans by George F. Bial, 241 Bell Ave., Hasbrouck Heights, 2 story, brick, concrete school, Church St. **$350,000**.

N. J., **Pompton Plains**—SCHOOL—First Reformed Church of Pompton Plains, Newark-Pompton Turnpike, plans by Paul Drake, 100 Summit Ave., Summit, school and hall at Newark-Pompton Turnpike. **$350,000**.

N. J., **West New York**—SCHOOL—Our Lady of Libera, 5808 Hudson Blvd., plans by Peter Terrafranca, 510 Bogert Rd., River Edge, school. **$360,000**.

N. Y., **Annandale-on-Hudson**—DORMITORY—Bard College, Annandale-on-Hudson, plans by Sidney M. Shelov, 44 W. 56 St., New York, Zone 19, and Peter Paul Muller, assoc. archts., 10 W. 133 St., New York, dormitory, **$416,000**. CD 4/1.

▲ N. Y., **Brooklyn**—APARTMENT, etc.—Atlantis Corp., 522 Fifth Ave., New York, Zone 17, plans by Oscar I. Silverstone, 666 Fifth Ave., New York, Zone 19, 16 story apartment, garage, 1311 Brightwater Ave. **$1,800,000**.

N. Y., **Brooklyn**—APARTMENT—Halldale Building Corp., c/o Lama, Proskauer & Prober, archts., 395 Pearl St., 7 story apartment, 1660-1672 Flatbush Ave. **$700 000**. To go ahead in Summer 1957.

▲ N. Y., **Buffalo**—LIBRARY—Canisius College, Main and Jefferson Sts., plans by Foit & Baschnagel, 250 Delaware Ave., college library. **$1,500,000**. CD 10/22.

N. Y., **Ithaca**—CHURCH, etc.—First Congregational Church of Ithaca, 120 W. Spencer St., plans by Arland A. Dirlam, 729 Boylston St., Boston, Mass., and Sherwood Holt, assoc. archt., 119 E. Buffalo St., church and parish house.

▲ N. Y., **New York**—APARTMENT—Stanley R. Broff, c/o Boak & Raad, archts., 175 Fifth Ave., Zone 10, 16 story apartment, 1147-1159 Madison Ave. from 85 to 86 Sts. **$2,000,000**.

▲ N. Y., **New York**—DOCTORS—The New York Infirmary, Stuyvesant Square East and 15 St., Zone 3, 6 story bldg. to house doctors, nurses and internes, 312-320 E. 15 St. **$1,000,000**.

N. Y., **New York**—APARTMENT—Pelham Homes, Inc., 1340 Astor Ave., plans by H. Herbert Lilien, 201 W. 72 St., Zone 23, 6 story apartment, at west side of Holland Ave. north of Pelham Parkway, **$455,000**.

N. Y., **Rochester**—RETREAT HOUSE—Catholic Diocese of Rochester, 50 Chestnut St., 3 story wing addn. to Cenacle Retreat House, 693 East Ave. **$400,000**.

N. Y., **Rochester**—DORMITORY—Nazareth College, 4245 East Ave., plans by Waasdorp & Northrup, 740 E. Ave., dormitory. **$758,000**.

▲ N. Y., **Saratoga**—DORMITORY—Skidmore College, Saratoga, dormitory. **$1,327,000**.

N. C., **Asheville**—HOTEL—Grove Park Inn, Asheville, two hotel addns. **$500,000**.

N. D., **Kenmare**—HOSPITAL—Deaconess Hospital Assn., Kenmare, plans by Ritterbush Bros., 209 N. Seventh St., Bismarck, hospital, **$413,000**.

▲ O., **Beachwood**—SHOPPING CENTER—Beachwood Shopping Center, c/o Albert Levin, Marshall Bldg., Cleveland, Zone 13, plans by John Graham & Co., 1426 Fifth St., Seattle, Wash., shopping center on 103 acre site at southeast corner of Cedar and Richmond Rd. **$32,000,000**.

O., **Beachwood**—HOMES—Marvin Helf, Inc., 10001 Carnegie Ave., Cleveland, Zone 6, plans by Louis J. Rotman, 31715 Vine St., Wickliffe, 30 HOMES, Isabelle Ave. **$720,000**.

O., **Cincinnati**—CHURCH—Forest Chapel Methodist Church, c/o Rev. Fishburn, 22 Grove Lane, Glendale (Cincinnati), plans by Sullivan-Isaacs-Sullivan, 1800 Reading Rd., Reading, church, Sharon St. in Forest Park, **$500,000**.

O., **Cincinnati**—CHURCH—St. Joseph Church, 745 Lincoln Park Dr., church building, **$400,000**. Site not selected.

O., **Dayton**—CHURCH—Dayton Baptist Temple, 1707 Ohmer St., plans by Logedrost & Walter, Reibold Bldg., brick, stone, glass, aluminum and wood church with auditorium educational unit, etc., air-conditioned **$500,000**. Work in about 30 days.

O., **Norwood**—SCHOOL—Sts. Peter & Paul School, 5411 Moeller St.; plans by Sullivan-Isaacs-Sullivan, 1800 Reading St., Reading, 16 room elementary school addn. **$350,000**.

▲ O., **Toledo**—OFFICE—Libbey-Owens-Ford Glass Co., 608 Madison St., plans by Skidmore, Owings & Merrill, 575 Madison Ave., New York, N. Y. 16 story office. **$2,500,000**.

Okla., **Enid**—CHURCH—First Methodist Episcopal Church, W. Randolph St., plans by D. A. Smith, Bass Bldg., church, **$435,000**.

Okla., **Oklahoma City**—SANCTUARY—All Souls Episcopal Church, 63 and Penna Sts., plans by Fred Pojezny, 1715 N. Broadway, sanctuary for church, Northwest 63 and Pennsylvania Sts. **$350,000**.

Okla., **Oklahoma City**—MOTEL—Benjamin Cain, 308 N.W. 38 St., plans by Fred Pojezny, 1716 N. Broadway, 4 story motel, N.W. 3 and Hudson Sts. **$800,000**.

Okla., **Tulsa**—DOCTORS CLINIC—Doctor's Inc., 2100 South Lewis St., plans by David Murray, 4232 S. Peora St., 7 story doctors clinic, 21 and Lewis Sts. **$500,000**.

Tex., **Dallas**—SCHOOL—Ursuline Academy, 4838 Walnut Hill Lane, school, **$500,000**.

Tex., **Houston**—CHURCH—Airline Baptist Church, c/o Congregation, 4127 Airline St., plans by Roy W. Leibsle & Assocs., 3702 Almeda Rd., Baptist Church, educational bldg. **$400,000**. Daniel W. Gower, 5819 Ridgeway, and Jerold L. Davis 3400 Montrose St., consult. engrs.

Tex., **Houston**—DWELLINGS—Garex Development Corp., 6505 Chippewa St., 24 brick veneer dwellings, **$402,500**; 21 brick veneer dwellings, **$367,500**, in Arlington Heights Subdivision,

Tex., **Houston**—DWELLINGS—Bob Harris, Inc., 704 S. Richey St., 22 brick veneer dwellings, **$385,000**; 20 brick veneer dwellings, **$350,000**, in Arlington Heights subdivision,

▲ Tex., **Houston**—CHURCH—South Main Baptist Church, 200 Colquitt St., plans by Wirts, Calhoun, Tungate & Jackson, 2506 Richton St., church plant constr. **$1,650,000**. Joe A. Poole, and R. L. Reid, Inc., both 2506 Richton St., consult. engrs. CD 2/8.

Tex., **San Antonio**—BOWLING BLDG.—Bowlerama of Texas, Inc., c/o John Chenault, archt., 1506 Fredericksburg Rd., 33,000 sq. ft. masonry type constr., 32-lane bowling bldg., Blanco Rd. between Hillwood Dr. and Weizmann Blvd. **$400,000**.

Tex., **San Antonio**—SHOPPING CENTER—Hillcrest Shopping Center, Inc., c/o Hessen & May, archts., 148 Olmos Dr., 42,000 sq. ft., masonry, concrete, steel shopping center, 2815 Hillcrest St., $375,000. R. Marvin Shipmen, 202 W. Olmos Dr., and Paul G. Silber, Jr., 150 W. Olmos Dr., San Antonio, Tex., consult. engrs.

Ont. **Guelph**—NOVITIATE—St. Stanislaus Novitiate, The Jesuit Fathers, R.R.5, Guelph, preliminary sketches made by Lindsay A. Wardell, 278 Lawrence Ave. E., Toronto, novitiate, two wings, **$800,000**.

▲ Ont., **Toronto**—APARTMENTS—Adanac Realty, 3339 Bloor St. W., Royal York Investments, 3339 Bloor St. W. W. Chartwell Investments, 750 Spadina Ave. and Long Constr. Co. Ltd., 39 Castlebar Rd., Toronto, plans by Hanks, Irwin, Pearson, 2848 Bloor St. W., apartments and houses, 275 units, 3 story apartments on east side, 2½ story apartments on west side of Royal York Rd., **$2,000,000**.

▲ Ont., **Toronto**—APARTMENT—Owner, c/o B. Cooper & Sons, 147 University Ave., plans by E. I. Richmond, 455 Spadina Ave., apartment, Keele St. and Lawrence Ave. W., North York, **$1,568,000**.

Que., **Montreal**—APARTMENT BLOCK—Milot Constr., Inc., 6033 Papineau Ave., plans by Chalifoux & Geoffrey, 6275 Papineau Ave., 3 story, bsmnt., 15-suite each 42x77 ft. and 57x69 ft. brick, stone apartment block, Basile Patenaude St. **$500,000**.

INDUSTRIAL BUILDINGS

Calif., **Menlo Park**—WAREHOUSE, etc.—Park Davis Co., P. O. Box 11T, Detroit, Mich., 1 story, 300,000 sq. ft., warehouse, office, Bohannan Industrial Park.

Calif., **San Francisco**—PLANT—Bauer-Schfeitzer Malting Co., 530 Chestnut St., plant expansion, 530 Chestnut St. **$100,000**.

▲ Colo., **Englewood**—PLANT—Garden Farm, Inc., East 60 Ave. and Albion St., Denver, dairy processing plant, between Nassau and W. Oxford Aves. **$1,000,000**.

Conn., **Clinton**—FACTORY—Shore Line Industries, Boston Post Rd., factory addn. **$100,000**.

Conn., **Norwalk**—FACTORY—Burndy Corp., Connecticut Ave., factory addn. **$126,000**.

Conn., **West Haven**—WAREHOUSE, etc.—Art-Ryte Floor Covering Co., 20 Rose St., New Haven, plans by Pedersen & Tilney, 119 Whitney Ave., New Haven, 1 story, 16,000 sq. ft. warehouse and office, **$160,000**.

D. C., **Wash.**—PARKING GARAGE—"H" St. and North Capitol Parking Syndicate, Colorado Bldg., plans by Walter Marlowe, 3200 "P" St. N.W., parking garage at "H" St. and Defrees St. N.W. **$250,000**.

▲ Fla., **Oldsmar**—LABORATORY—Sperry Rand Corp., 30 Rockefeller Plaza, New York, N. Y., plans by C. Dale Dykema, North Redington Beach, electronics laboratory. **$2,000,000**.

▲ Ga., **Chamblee**—PARTS DEPOT—Deere & Co., 1325 3 Ave., Moline, Ill., parts depot. **$1,000,000**.

Ill., **Chicago**—WAREHOUSE—Florsheim Shoe Co., 130 E. Canal St., plans by A. Epstein & Sons, Inc., 2011 W. Pershing Rd., 1 story, 77,300 sq. ft. warehouse, Canal and Taylor Sts. **$600,000**.

Ind., **Butler**—MANUFACTURING—Bohn Aluminum & Brass Corp., 1400 Lafay Bldg., Detroit, Mich., plans by Giffels & Vallet, Inc., archt. and consult. engr., 1000 Marquette Bldg., Detroit, Mich., 30x160 ft. structural steel, masonry, rein.-con. manufacturing bldg. **$450,000**.

▲ Ind., **Evansville**—PILOT PLANT, etc.—Mead Johnson & Co., 2404 Penn St., pilot plant, office and employee training institute, etc. **$8,500,000**.

Ky., **Paducah**—WAREHOUSE—Staples Real Estate & Loan Co., George Staples Jr., mgr., 1305 E. Cypress St., Charleston, Ill., plans by Jack Harris, 518 Hickman Bldg., 248 Madison Ave., Memphis, Tenn., concrete warehouse. **$100,000**. Sears Roebuck & Co., 925 S. Homan St., Chicago, Ill., lessee. Bids in May.

La., **Jennings**—CATFORMER UNIT—Evangeline Refining Co., Inc., Jennings, catformer unit. **$750,000**.

Mich., Owosso—PLANT—**Reemond Co., Inc.**, Angola, Ind., plant mfg. fractional horsepower motors. **$350,000**.

▲ Mich., **Wyandotte**—PLANT—Wyandotte Chemical Corp., Frank B. Wolcott, gen. mgr. Research & Engineering Div., Wyandotte, polyether plastics products plant, between Biddle and Detroit River, **$3,000,000**. CD 2/15/56.

N. J., **Newark**—PLANT—G. B. Cademartori, 1419 Oleri Terrace, Fort Lee, 2 story, 5,000 sq. ft. refinery plant, Tompkins Point Rd. in Newark Meadows. **$200,000**.

Pa., **Phila.**—TERMINAL—R. C. Motor Lines, 2500 Laura St., Jacksonville, Fla., truck terminal. **$100,000**.

S. D., **Winner**—GRAIN ELEVATOR—Wayne Deaver and Clarence Meyer, Alliance, Neb., grain elevator, **$100,000**.

▲ Tex., **Beaumont**—REFINERY UNITS—Magnolia Petroleum Co., c/o Magnolia Bldg., Dallas, 100,000 bbl. atmospheric crude still; 32,000 vacuum unit; hydrogen-sulfide recovery system; 30,000 bbl. savaforming unit; a 2nd alkylation unit, a 3rd 20,000 bbl. treating plant, high pressure gas handling facilities; lube blending plant unit, 200,000 bbl. floating roof tank. **$30,000,000**.

Tex., **Corpus Christi**—PLANT—Corpus Christi Refining Co., 4550 Tribble St., plant modernization, alterations. **$560,000**.

▲ Tex., **Corpus Christi**—REFINERY—North American Petroleum Corp., 614 S. Staples, refinery. **$4,000,000**.

▲ Tex., **Dallas**—WAREHOUSING—Alford Refrigerated Warehouses, 318 Cadiz St., dry and cold storage warehousing unit, **$2,000,000**; 600 ft. long dry storage warehousing unit, **$3,000,000**.

Tex., **Dallas**—WAREHOUSE—Trammell Crow, 425 S. Field St., warehouse in Hillene Dr. area, **$200,000**. CD 6/19/53.

Tex., **Houston**—PLANT—Hydril Co., 302 McCarty St., oil tool mfg. plant expansion, **$200,000**.

▲ Tex., **Houston**—KILNS—Ideal Cement Co., c/o Clinton Docks, Houston, addn. of 3rd and 4th kilns at plant, Galena Park area. **$3,500,000**.

▲ Tex., **Port Arthur**—ALKYLATION UNIT—Atlantic Refining Co., General Office, Atreco, Port Arthur, 2,100 bbl. alkylation unit, adjacent to existing refinery. **$1,000,000**.

Wis., **Waukesha**—PLANT—Waukesha Realty Corp., 250 North 12 St., 50,000 sq. ft. plant, **$500,000**. Ritepoint, Inc., subsidiary of Norma-Hoffman Bearings Corp., Stamford, Conn., lessee.

▲ Wyo., **Green River**—PLANT—Intermountain Chemical Div., Food Machinery & Chemical Corp., Green River, plant addns. **$1,000,000**.

Ont., **Prescott**—FACTORY—Bruce Coal Co. Ltd., Hardy Arcade, Ottawa, reconstr. factory, **$150,000**.

Ont., **Toronto**—FACTORY—American Resinous Chemicals of Canada Ltd., 20 Trent Ave., plans by Paul Sears, 1498 Yonge St., 1 story, 96x160 ft. concrete block factory, Scarborough, **$100,000**. Leah Kobayashi & Assocs., 490 Jarvis St., consult. engrs.

UNCLASSIFIED

▲ **Arizona**—RURAL DISTRIBUTION LINES—Sulphur Springs Valley Electric Co-operative, Willcox, 237 mi. distr. line, 31 mi. 69 KV transmission line, new sub-station and system imprvs. Cochise Co. **$1,584,000**. CD 4/23/52.

Calif., **Los Angeles**—SWIMMING POOL, etc.—Bd. Supervs., Los Angeles Co., 501 Hall Records, plans by Neptune & Thomas, 742 Colorado Blvd., swimming pool, Jane Reynolds Park, Cap Proj. 8790, incl. 100x50 ft. pool and bath house, Lancaster. **$220,000**.

Colorado—RURAL DISTRIBUTION LINES—La Plata Electric Assn., 171 17 St., Durango, 97 mi. rural distr. lines, sys. imprvs., La Plata Co. **$452,000**. CD 8/28/47.

Conn., **New Haven**—HARBOR FRONT DEVELOPMENT—City City Hall, Harbor Front Development, land filling, bulkhead, park, heliport. $350,000. Bids in June. Henry A. Pfisterer, 111 Whitney Ave., consult. engr. William Bolton, city engr. CD 10/23.

▲ **Florida**—RURAL DISTRIBUTION LINES—Lee County Electric Co-operative, Fort Myers, 30 mi. 69 kv transmission line, 166 mi. electric distr. line, 7500 kva sub-station and sys. imprvs., Lee Co. **$1,000,000**. CD 11/1/55.

Illinois—RURAL DISTRIBUTION LINES—McDonough Power Co-operative, W. Jackson St., Macomb, 19 mi. rural distr. lines, 8 mi. 69 kv transmission line, 2 sub-stations and sys. imprvs., McDonough Co. **$531,000**. CD 12/12/51.

† Kan., **Wichita**—AIR CONDITIONING, etc.—General Services Admin., Pub. Bldgs. Service, General Services Bldg., 19 and F Sts. N. W., Wash. 25, D. C., air-conditioning and new lighting systems for U.S. Post Office and Court House. **$531,000**.

† **Md., Baltimore**—AIR-CONDITIONING—General Services Admin., Pub. Bldgs. Service, General Services Bldg., 19 and F Sts. N. W., Wash. 25, D. C., air-conditioning U.S. Public Health Service Hospital. **$960,000.** Turpin, Wachter & Assoc., 1004 N. Charles St., Baltimore, Md., consult. engrs.

Mich., Hazel Park — SKATING RINK — City, Calvin C. Henry, city mgr., 22422 Stephenson Hy., defeated **$200,000** bonds Apr. 1, ice skating rink, and swimming pool. CD 3/7.

Minn., Winona—SWIMMING POOL—City, R. G. Wildgrube, clk., defeated **$275,000** bonds Apr. 1, swimming pool. CD 1/16.

Missouri—RURAL DISTRIBUTION LINES—Osage Valley Electric Co-operative Assn., Maurice S. Solomon, mgr., Hy. 71 and Fort Scott Sts., Butler, 90 mi. rural distr. lines, sys. imprvs., Bates Co. **$594,000.** Allgeier, Martin & Assocs., 1204 Main St., Joplin, consult. engrs.

▲ **Oklahoma**—RURAL DISTRIBUTION LINES—Indian Electric Co-operative, 116 S. Broadway, Cleveland, Okla., 125 mi. rural distr. line, new warehouse bldg. and sys. imprvs., Pawnee Co. **$1,090,000.** CD 7/23/52.

† **Okla., Muskogee**—AIR CONDITIONING, etc.—General Services Admin., General Services Bldg., Wash. 25, D. C. air conditioning and lighting systems at U. S. Post Office and Court House. $456,000. Sorey, Hill & Sorey, 809 N.W. 36 St., Oklahoma City, consult. engrs.

▲ **Texas**—GAS LINES—Pioneer Gathering System, Inc., San Angelo, 27 mi. 16 in. and 27 mi. 12 in. gas lines, Sutton and Schleicher Counties. **$1,250,000;** compressor station, Schleicher Co. **$350,000.**

▲ **Texas**—RURAL DISTR. LINES—Rural Colorado River Electric Co-operative, San Marcos, expansion rural power system, distr. lines, Hays Co. **$1,120,000.**

Tex., Fort Worth — UNDERGROUND CIVIL DEFENSE CENTER—City, c/o J. F. Davis, mgr., City Hall, constr. rein.-con. underground Civil Defense Center at Lake Worth. **$250,000.** Don Kirk, 817 N. P. Anderson Bldg., consult. engr.

Tex., Kingsville—PARK—City of Kingsville and Kleberg Co., voted bonds park-recreation. **$250,000.**

Tex., Lubbock—MAUSOLEUM—Resthaven Mausoleum, c/o Cantrell, Burns & Whitaker, archts. Great Plains Life Bldg., 1014 crypt mausoleum, **$175,000.**

† **Tex., Wichita Falls**—AIR-CONDITIONING, etc.—General Services Admin., General Services Bldg., Wash. 25, D. C., air conditioning and lighting system at U.S. Post Office and Court House. **$378,000.** Pardue & Read, Radio Bldg., consult. engrs.

▲ **Que., Montreal**—GREENHOUSES—City, City Hall, constr. exhibition and service greenhouses at Botanical Gardens, Sherbrooke St. E. and Blvd. Pie IX, $1,400,000.

ADVERTISEMENT FOR BIDS

Northern Illinois Toll Highway

Bids to be opened May 16, 1957

CONTRACT T-2A

The work to be done under this Contract shall commence on June 15, 1957, or on such earlier date as may be mutually agreed upon between the Commission and the Contractor. All work under this Contract shall be completed on or before Dec. 15, 1958, and consists of:

The grading, drainage, paving, the construction of appurtenances, and the erection of precast concrete and structural steel bridges for approximately 2.59 miles of the Tri-State Tollway of the Northern Illinois Toll Highway in construction Section T-2A, beginning at a point about 467 feet east of the Chicago, Rock Island and Pacific R.R. at the Tri-State Tollway, Centerline Station 551+27.92 in Bremen Twp., Cook Co., Ill., and extending northerly to a point approximately 1117 feet northwest of 131st St. at Tri-State Tollway Centerline Station 688+00 in Worth Twp., Cook Co., Ill.

The approximate quantities of the principal items of work are as follows:

Roadway Excavation	**82,500**	**C. Y.**
Special Excavation	**65,000**	**C. Y.**
Borrow	**1,650,000**	**C. Y.**
Special Fill	**20,000**	**C. Y.**
Selected Subgrade	**45,000**	**C. Y.**
Granular Subbase	**24,000**	**C. Y.**
10" Reinforced PCC Pavement	**72,300**	**S. Y.**
3" Bituminous Concrete Shoulders	**39,500**	**S. Y.**
Reinforcing Steel	**2,283,000**	**Lbs.**
Structural Concrete	**16,600**	**C. Y.**
Structural Steel—Erection	**840,000**	**Lbs.**

CONTRACT T-2B

The work to be done under this Contract shall commence on June 15, 1957, or such earlier date as may be mutually agreed upon between the Commission and the Contractor. All work under this Contract shall be completed on or before Dec. 15, 1958, and consists of: The Grading, drainage, paving, the construction of appurtenances, and the erection of precast concrete and structural steel bridges for approximately 3.30 miles of the Tri-State Tollway of the Northern Illinois Toll Highway in construction Section T-2B, beginning at a point approximately 1117 feet northwest of 131st Street at the Tri-State Tollway Centerline Station 688+00 in Worth Twp., Cook Co., Ill., and extending northerly to a point approximately 1500 feet south of 111th Street at Tri-State Tollway Centerline Station 862+00 in Worth Twp., Cook Co., Ill.

The approximate quantities of the principal items of work are as follows:

Roadway Excavation	**521,000**	**C. Y.**
Special Excavation	**50,000**	**C. Y.**
Borrow	**300,000**	**C. Y.**
Special Fill	**5,000**	**C. Y.**
Selected Subgrade	**84,000**	**C. Y.**
Granular Subbase	**49,000**	**C. Y.**
10" Reinforced PCC Pavement	**154,000**	**S. Y.**
3" Bituminous Concrete Shoulders	**70,300**	**S. Y.**
Reinforcing Steel	**1,367,000**	**Lbs.**
Structural Concrete	**11,100**	**C. Y.**
Structural Steel—Erection	**787,000**	**Lbs.**

CONTRACT T-2C

The work to be done under this Contract shall commence on June 15, 1957, or on such earlier date as may be mutually agreed upon between the Commission and the Contractor. All work under this Contract shall be completed on or before Dec. 15, 1958, and consists of: The grading, drainage, paving, the construction of appurtenances, and the erection of precast concrete bridges for approximately 2.45 miles of the Tri-State Tollway of the Northern Illinois Toll Highway in construction Section T-2C, beginning at a point about 1500 feet south of 111th Street at Tri-State Tollway Centerline Section 862+00 in Worth Twp., Cook Co., Ill., and extending northerly to a point about 1083 feet south of 95th Street at Tri-State Tollway Centerline Station 991+38.35 in Palos Twp., Cook Co., Ill. The approximate quantities of the principal items of work are as follows:

Roadway Excavation	**78,000**	**C. Y.**
Special Excavation	**48,000**	**C. Y.**
Borrow	**1,400,000**	**C. Y.**
Special Fill	**53,000**	**C. Y.**
Selected Subgrade	**46,000**	**C. Y.**
Granular Subbase	**24,000**	**C. Y.**
10" Reinforced PCC Pavement	**72,000**	**S. Y.**
3" Bituminous Concrete Shoulders	**40,000**	**S. Y.**
Reinforcing Steel	**1,300,000**	**Lbs.**
Structural Concrete	**10,800**	**C. Y.**

CONTRACT T-2ABC

This contract covers a combination of Contracts T-2A, T-2B and T-2C taken together.

THE ILLINOIS STATE TOLL HIGHWAY COMMISSION

20 N. Wacker Dr., Chicago **By Austin L. Wyman, Chairman**

Write, wire or phone for detailed information and necessary forms. Chief Engineer, Room 1654, 20 N. Wacker Dr., Chicago 6, Ill. Telephone FRanklin 2-7020.

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If you're interested in bidding on government projects, you'll be glad to know that the Washington Service Bureau of National Surety Corporation issues regular bulletins on just such projects.

They tell you *who* is issuing the invitations, *where* and *when* bids will be received and opened.

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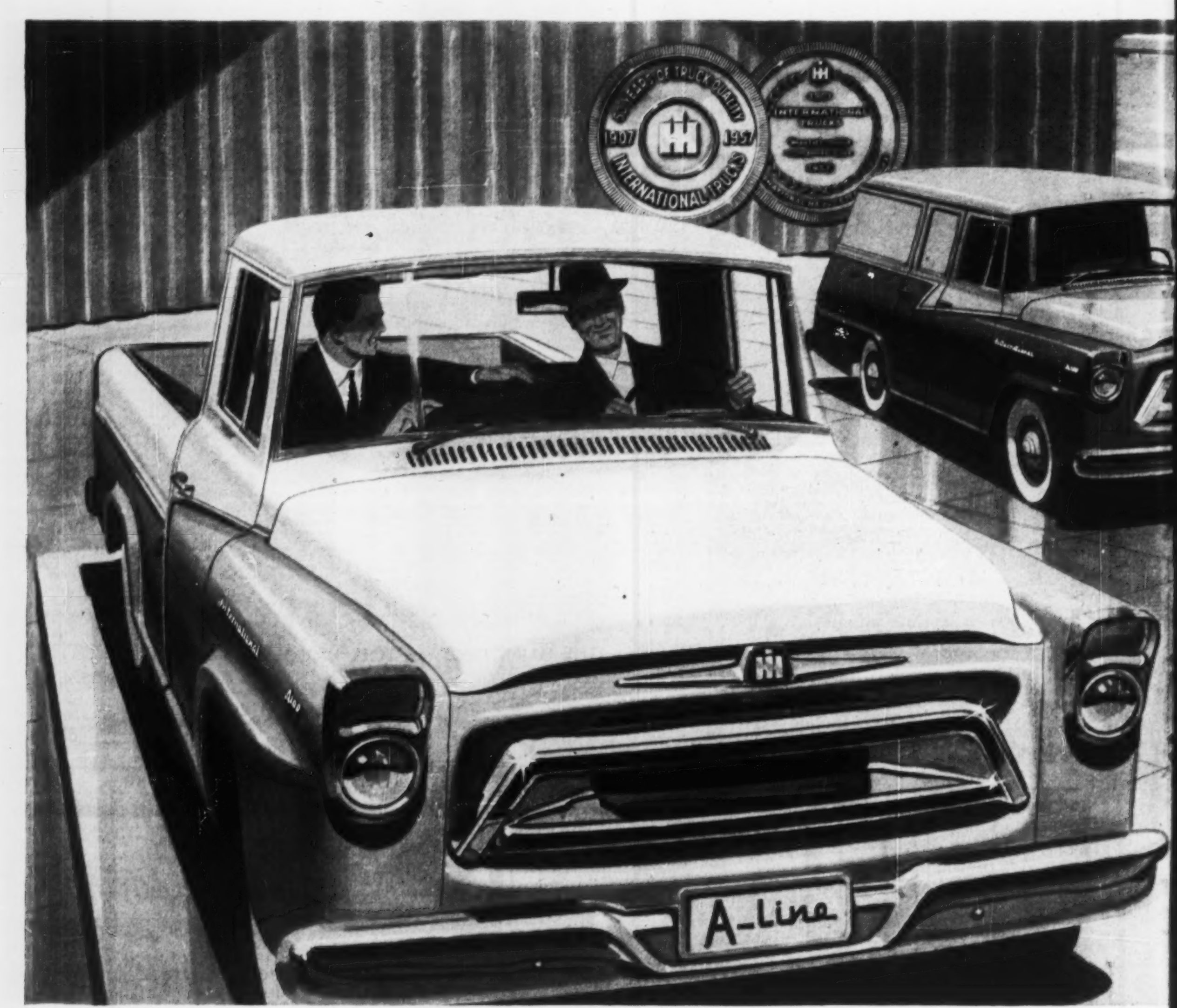
Branch Offices in Principal Cities Throughout America



New A-Line models range from ½-ton Pickups through 33,000 lbs. GVW Six-Wheelers.

NEW ACTION-STYLING! MORE USABLE POWER!

Here is the crowning achievement of fifty years of quality truck production—the great new Golden Anniversary INTERNATIONAL Trucks!

They're *Action-Styled* with fresh, clean functional lines that set a new style pace.

They're powered by new engines that put out more *usable* horsepower—including the most powerful "six" available in its field! They have exclusive new cab mountings for quieter, more level ride. New brakes, new steering, new frames—and many other new features.

The result is a new line of trucks that—more than ever before—are built to cost *least* to own!

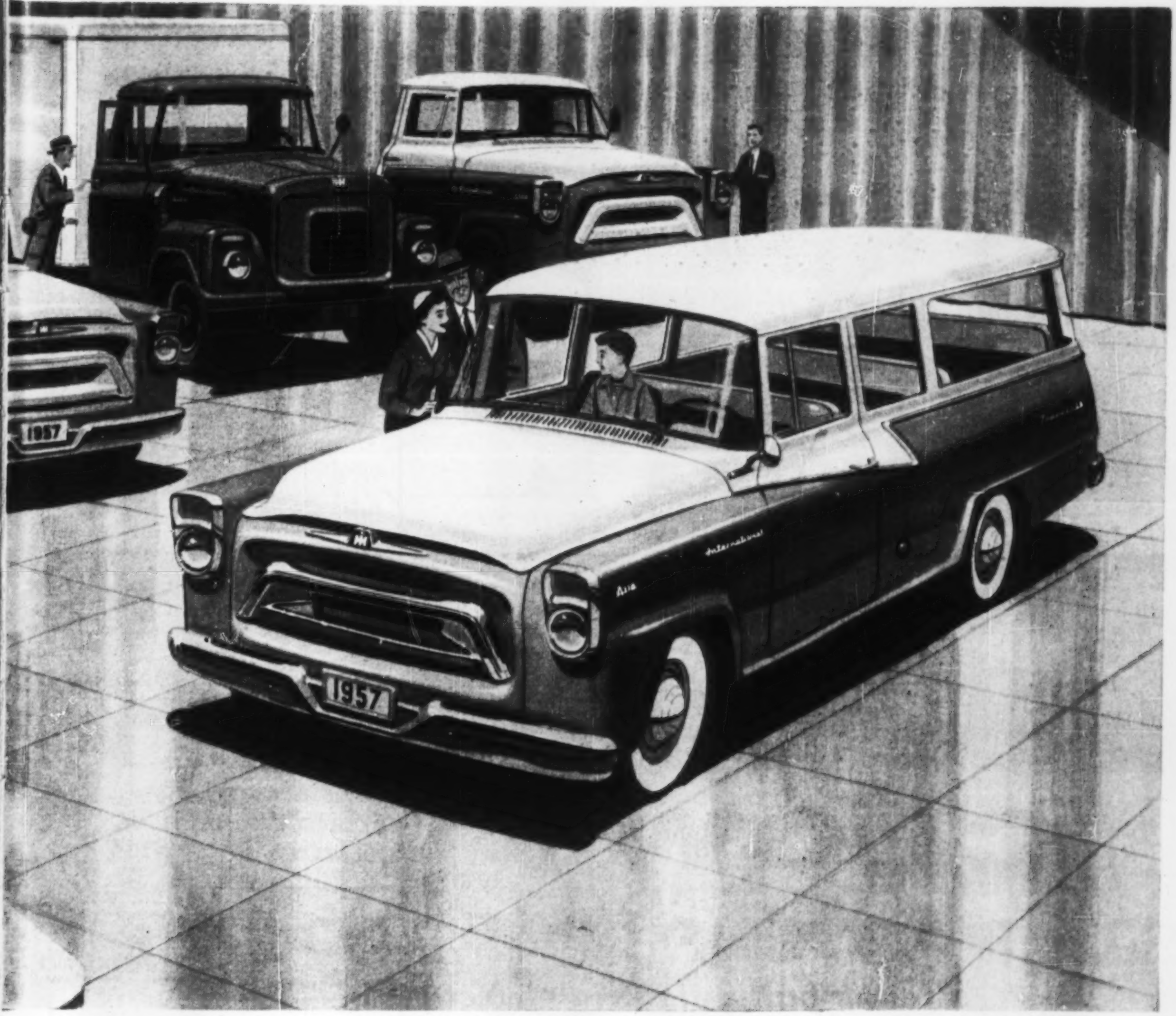
See and drive these newest INTERNATIONALS *today!* International Harvester Company, Chicago.

Trucks Unlimited...Powered for Modern Traffic...Plus Modern Comfort

Handsome "Golden Jubilee" Pickup with the *longest* all-steel body in its class. Only Panel with third door. New 8-passenger Travelall® models. New cab-forward models with ideal 89-inch BC dimension. Tractors to 48,000 lbs. GCW. Wide range of all-wheel-drive trucks.

Redesigned engines produce *increased* power without strain from new combustion chamber and valve position . . . more usable power that's "bred for the job". . . at low rpm to keep operating and maintenance costs low. New quick-starting 12-volt ignition.

Biggest windshield—1,181 sq. in.—and *widest* cab in their class! New "Silent-Vent" door wings. New, wider front and rear springs. Exclusive level-riding 5-point cab mounting. Bigger brakes with more lining area, larger cylinders and boosters for quicker, easier stops.

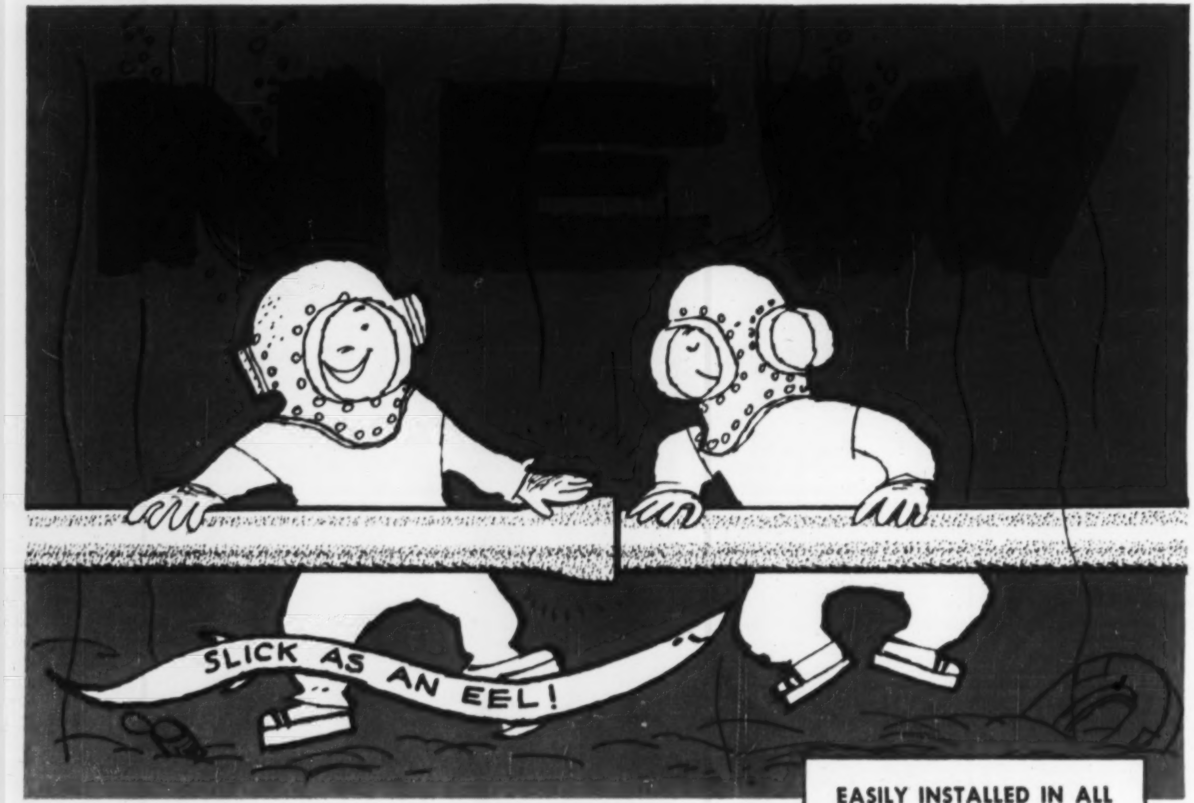


Other INTERNATIONALS, to 96,000 lbs. GVW, round out the world's most complete line.

NEW Golden Anniversary INTERNATIONALS

Cost least to own!

Motor Trucks • Crawler Tractors • Construction Equipment
McCormick® Farm Equipment and Farmall® Tractors



EASILY INSTALLED IN ALL KINDS OF WEATHER . . . YOU COULD EVEN DO IT UNDER WATER!

CLOW
SLIP-ON PIPE JOINT*

forms bottle-tight joint instantly!

Saves you so much time you'll think the clock is paralyzed. Yet assembly is simple and easy, and you get a seal that's tight as a drum. Best of all, you get Clow Cast Iron Pipe . . . for the watermain installation that is economical and permanent.

Want more details? You should have them. There's a Clow man not too far from you right now . . . ready to give you all the facts. Phone us—or drop us a note.

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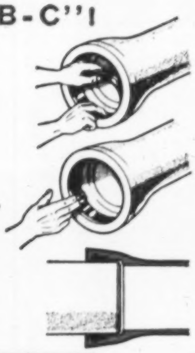
EASY AS "A-B-C"!

A INSERT GASKET IN BELL.

B WIPE ON LUBRICANT.

C SLIP PLAIN END INTO BELL.



SINCE 1878

JAMES B. CLOW & SONS, Inc.

201-299 North Talman Avenue, Chicago 80, Illinois

Subsidiaries:
Eddy Valve Company, Waterford, New York
Iowa Valve Company, Oskaloosa, Iowa

Bids—Low Bids—Contracts—Third Section

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 29 Delaware
STREETS AND ROADS
April 30, May 2 New Jersey

▲ **N. Y., New York**—COAL HANDLING STRUCTURES—BA 5/10—New York City Transit Auth., 370 Jay St., Brooklyn, Zone 1, coal handling structures for 59th Street Power Plant, Manhattan Boro, P-114, Contr. No. 1, general constr. Bids 3/29 rejected. CD 4/5, under LB.

BUILDINGS—BA

▲ **Pa., Steelton**—SCHOOL—BA 5/9—Pub. School Auth., 101 S. 25 St., Harrisburg, Junior-Senior High School for Steelton-Highspire Joint School System. $1,750,000. Plans deposit $40 each contract. Lawrie & Greene, 321 N. Front St., Harrisburg, archts. CD 4/11/56.

HEAVY CONSTRUCTION—LB & CA

▲† **U. S. Eng.**, 24 St. and Maryland Ave., Baltimore 18, Md. cancelled bids to have been opened Apr. 26, administration bldg., Olmstead Air Force Base, MIDDLETOWN, PA. **$1,000,000-$3,000,000**. CD 4/2.

BUILDINGS—LB & CA

▲ **John W. Cowper Co.**, Sidway Bldg., Buffalo, N. Y. CA **$1,994,000**. HIGH SCHOOL, LACKAWANNA, N. Y. Bd. Educ., Lackawanna, N. Y. CD 4/8, under LB.

▲ **Raber & Landes**, c/o H. I. Feldman, archt., 415 Lexington Ave., New York 17, N. Y. Owner Builds. **$2,000,000**. 14 story APARTMENT, 990 Lexington Ave. between 71 and 72 Sts., NEW YORK, N. Y.

▲ **B. J. Lucarelli & Co., Inc.**, 22 Orchard St., Jersey City, N. J. LB **$1,989,000**. DORMITORY group, Proj. N. J. 28-CH-6, EAST ORANGE, N. J. Upsala College, East Orange, N. J. Bids Mar. 26. CD 3/1.

▲ **Chestnut Hills Homes**, c/o Rudolph G. Bolling, archt., 141 Morton Dr., Ramsey, N. J. Owner Builds. **$1,800,000**. 53 HOUSES at Craig Rd. and Hillsdale Ave., HILLSDALE, N. J.

▲ **Woodstock-at-Westfield Homes**, c/o Grossi-Mittleman Agency, 1143 E. Jersey St., Elizabeth, N. J. Owner Builds. **$2,000,000**. 96 HOUSES on tract at Rahway Ave., WESTFIELD, N. J.

▲ **Butler Area Joint School**, Butler, Pa., rejected bids Feb. 11, SENIOR HIGH SCHOOL, BUTLER, PA. LB **$3,256,000**. CD 3/8, under LB.

▲ **Baltimore Contractors, Inc.**, 711 S. Central Ave., Baltimore, Md. LB **$3,184,400**. (2 bidders) addns., alterations to BLDGS. and utilities, Veterans Hospital, PERRY POINT, MD. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Apr. 16. CD 2/8.

SOUTH

BUILDINGS—LB & CA

▲ **G. E. Bass Constr. Co.**, 2715 N. State St., Jackson, Miss. CA Total est. **$5,000,000**. 15 story OFFICE, JACKSON, MISS. R. E. Dumas Milner, Milner Bldg., Jackson, Miss. CD 1/23.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 30 Indiana

▲† **Illinois**—BA 5/24—U. S. Eng., 475 Merchandise Mart, Chicago 54, widening third section 60 ft. channel to width of 225 ft., for 4 miles, Calumet Sag Channel, Serial No. CIVENG-11-032-57-36. Extended date. CD 4/11.

HEAVY CONSTRUCTION—LB & CA

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago,

Peter Kiewit Co. & Condon Cunningham Co., 4229 Lafayette Ave., Omaha, Neb., and **Paschen Contrs., Inc.**, 2739 Elston Ave., Chicago, Ill., LB **$3,231,086**. Contr. T-4A, 2-lane bridge structure paving only 0.91 mi. beginning 79 St. exten. across tracks of Gulf Mobile & Ohio R.R. near Willow Springs. Bids Apr. 11. CD 3/22.

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago,

Central Engineering Co., 2531 Rockingham Rd., Davenport, Iowa, LB **$2,085,269**. Contr. E-1-A, grading, drainage, paving, appurtenances erecting precast concrete, steel bridges 3.67 mi. beginning W of Deerpath Rd., extending easterly to point W of Rte. 31, Kane Co. Bids Apr. 11. CD 3/22.

▲ **Arcole Midwest Corp.**, 3225 Main St., Skokie, Ill. and **M. J. Boyle & Co.**, 2480 Elston Ave., Chicago, Ill., CA **$2,583,780**, Section 7D-3 and 7E-3, furnishing, placing, concrete deck, rein.-con. steel handrail pipe drain, Calumet Skyway Toll Bridge, CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Jan. 28, awarded Mar. 29. CD 2/5, under Illinois State Toll Hy. Comn., as owner.

BUILDINGS—LB & CA

▲ **Ohio Homes Dist. Inc.**, Pippin and Adams Rd. Cincinnati, O., Own Forces, **$1,890,500**. 140 bsmntless HOMES, Adams and Pippin Rds., CINCINNATI, O. Edward Niemeier, 3818 N. Bend Rd. engr. Awarded Apr. 11.

▲ **The Austin Co.**, 16112 Euclid St., Cleveland, O., CA Est. **$10,000,000**. design and construct, 4 story, glazed brick, limestone, aluminum and glass PLANT and OFFICE BLDG., air-conditioned, E. 9 and Lakeside Ave., CLEVELAND, O. The Cleveland Press, Rockwell and E. 9 Sts., Cleveland, O. CD 10/23/53.

▲ **John W. Galbreath Co.**, 42 E. Gay St., Columbus, O., Owner Builds, **$4,000,000**. 400 ranch-type HOMES, WOODSFIELD, O.

▲ **Oliver L. Parks Realty Co., Inc.**, 815 St. William St., Cahokia, East St. Louis, Ill., Owner Builds. **$2,500,000**. 300 HOMES, St. Joseph Gardens subdivision, incl. streets, sanitary sewers, etc. CAHOKIA (East St. Louis, P. O.) ILL.

▲ **J. R. Richards**, 438 Brookhurst Dr., Dallas, Tex., CA Est. **$2,000,000**, SHOPPING CENTER Addn., GLENDALE, WIS. Corrigan Properties, Inc., c/o Boston Store, Lessee, 331 W. Wisconsin Ave., Milwaukee, Wis. CD 3/7.

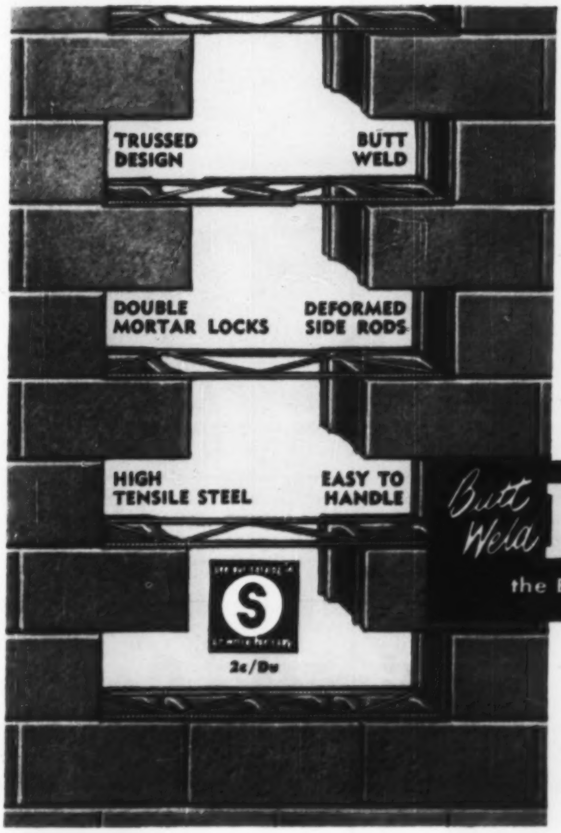
▲ **Macomb Building Co.**, 101 S. Gratiot St., Mount Clemens, Mich. Owner Builds. **$2,000,000**. Hall Farms Estates brick HOMES, 2 mi. north of Mt. Clemens, Gratiot and M-59, MOUNT CLEMENS, MICH.

▲ **Jannetta Constr. Co.**, 23945 Grunalt St., Warren, Mich. CA Est. **$3,500,000**. 250 brick HOMES, Grunalt, Stephens Sts., WARREN, MICH. John W. Duncan, agt., Center Line, Mich.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 30 Iowa
STREETS AND ROADS
April 30 Iowa



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ON THE NEW INDIANA

American Welded Wire Fabric in the road...

Welded Wire Fabric-reinforced

CRACK CONTROL! Since it keeps the road surface smoother, American Welded Wire Fabric helps make the new Indiana Toll Road a *safer* road, as well as a better-riding and more durable road. American Welded Wire Fabric now comes in a complete range of wire sizes up to and including ½" in diameter, 2", 3", 4" and 6" on center.

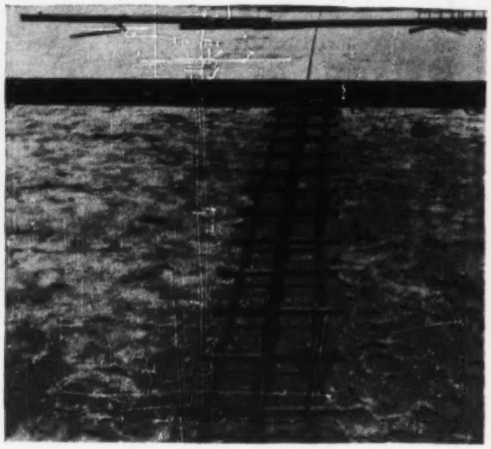
Why 95% of all toll roads are reinforced with steel!

LONGER LIFE—Distributed steel reinforcement, such as American Welded Wire Fabric, extends pavement life because it adds 30% to the strength of concrete slabs.

GREATER SAFETY—Steel Wire Fabric reinforcement controls cracking, keeps the pavement smooth and makes it safer to drive on.

LOWER COST—By extending pavement life and because Wire Fabric-Reinforced concrete pavements can be built with fewer joints, steel reinforcement reduces maintenance costs and lowers long-term cost of any concrete road.

SMOOTH RIDING! Specially designed American Road Joints were used on the Indiana Toll Road to keep the long slabs in proper alignment and provide an especially smooth ride. These joints assure adequate load transfer for a balanced pavement design.



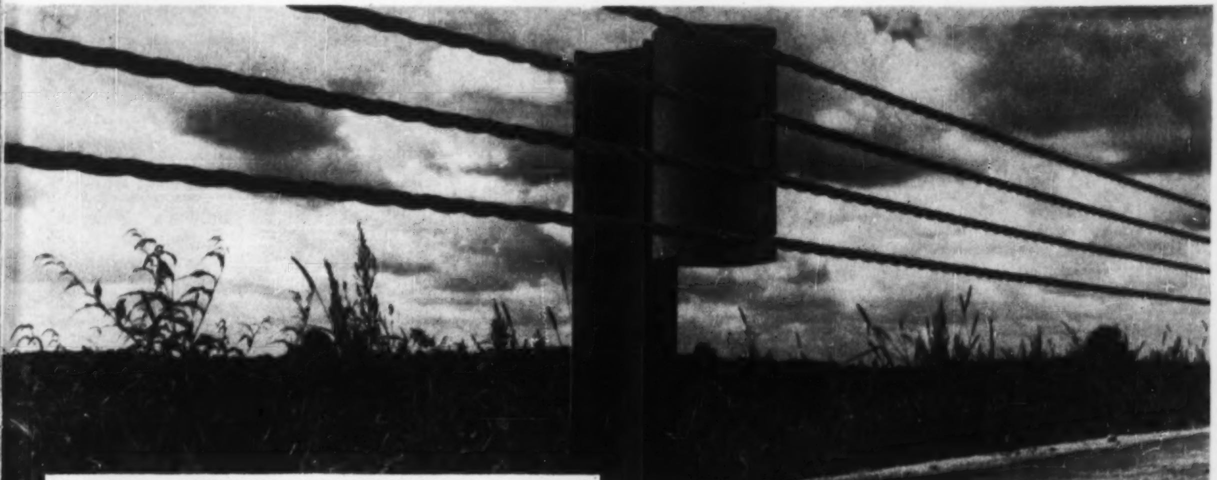
USS American Welded Wire Fabric

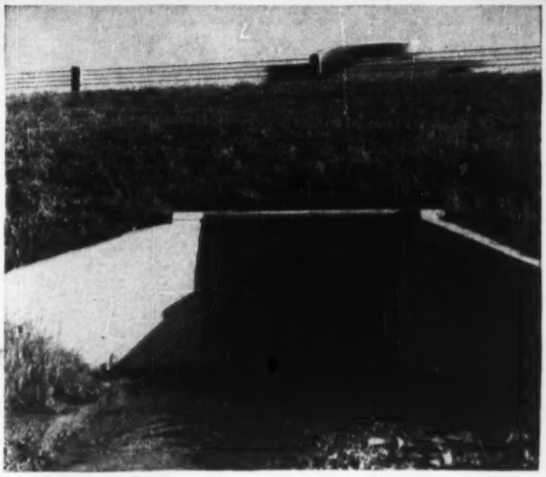
USS Multisafty Cable

UNITED STATES STEEL

TOLL ROAD...

Multisafty Cable Highway Guard along the road... concrete pipe under the road!





SAFETY, OFF THE ROAD! It is impossible to prevent accidents completely. But here is one way to minimize damage—and injuries: Install American Multisafty Cable Highway Guard along the side of the road, as they did here on the Indiana Toll Road. It is the only guard rail sold that was designed for definite miles-per-hour protection based on extensive testing. The combination of resilient steel cables, plus spring-steel offset brackets, cushions the shock of any collision, and restrains the vehicle, too. American Steel & Wire also makes beam-type highway guard.

GOOD COMBINATION! Portland cement concrete and Welded Wire Fabric reinforcement have been for many years, and remain today, the best and most economical and durable combination of materials for culverts, sewers, and force mains. Wire Fabric Reinforcement gives the concrete culverts on the Indiana Toll Road the greater strength needed for long life.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL, GENERAL OFFICES: CLEVELAND, OHIO
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The catalogs and brochures describing the uses and advantages of the various construction materials made by American Steel & Wire have been revised and brought up to date. You need the data in these booklets, if you use or build with concrete. Send for your free copies.

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☐ American Welded Wire Fabric for Portland Cement Concrete ☐ American welded Wire Fabric for Asphaltic Concrete ☐ American Welded Wire Fabric for Airport Runways ☐ American Road Joints ☐ Multisafty Cable Highway Guard ☐ American Beam-type Highway Guard ☐ American Wire and Strand for Prestressed Concrete

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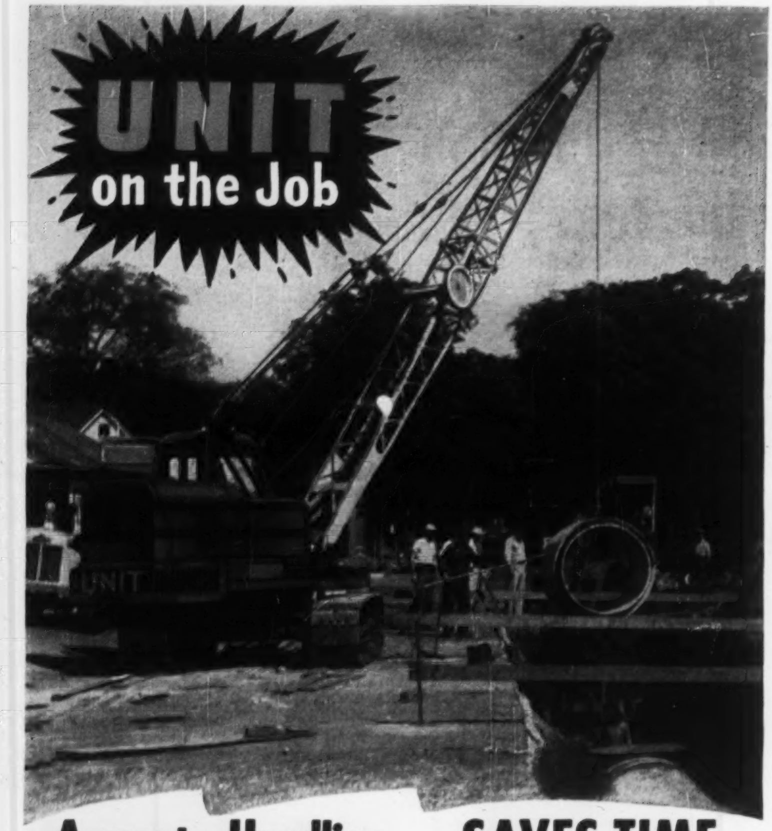

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This sturdy UNIT Crawler Crane offers plenty of power plus accurate control. Spots heavy sewer pipe perfectly into the desired position. Adjustable Hook Rollers, Extra Long Crawlers and Wide Multiple Hinged Crawler Shoes provide all-around stability. Full Circle Swing, controlled from within UNIT'S FULL VISION CAB, provides safe and efficient operation. The operator has a complete view of the entire job at all times. GET THE FACTS! Investigate this modern UNIT and its many features. Write today for literature.

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½ or ¾ YARD EXCAVATORS . . . CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL

SHOVEL
DRAG
CLAM
HOE
CRANE
MAGNET

All Models Convertible to ALL Attachments!

▲† Texas—BA 6/15—U. S. Eng., Box 1229, Galveston, rectification and/or imprvs. to Brays Bayou, ENG-41-243-57-52. $2.500,000. CD 4/16, under LB.

HEAVY CONSTRUCTION—LB & CA

▲ **Frederick Snare Co.**, 233 Broadway, New York, N. Y., CA **$2,000,000**; constr. ore unloading dock, at Point Comfort, PORT LAVACA, TEX. Aluminum Co., of America, 1501 Alcoa Bldg., Pittsburgh, Pa. Grand total $4,650,000. CD 10/16, under Earthwork, etc.;

Belco Industrial Equipment Div., Inv., Box 2132, Houston, Tex., CA **$1,500,000**; furnishing, installing process piping, Point Comfort (Port Lavaca, Tex.);

Tuloma Builders, Inc., Box 7036, Tulsa, Okla., CA **$800,000**, power house piping, Point Comfort (Port Lavaca Tex.);

Peterson Bros. Steel Erection Co., 1900 Milby St., Houston, Tex., CA **$350,000**; furnishing, erecting structural steel at 7th potline and erecting 2 gentry cranes at ore unloading dock, at Point Comfort, (Port Lavaca, Tex.).

▲† **T. C. Bateson Constr. Co.**, Box 7305 Inwood Station, Dallas, Tex., CA **$2,632,700**. Administration Bldg., Air Force Academy, IFB 05-613-57-20, COLORADO SPRINGS, COLO. Dpt. Air Force, Box 1670, Colorado Springs, Colo. Bids Mar. 28. CD 4/11, under LB.

BUILDINGS—LB & CA

▲ **Kraus-Anderson, Inc.**, 501 S. Eighth St., Minneapolis, Minn. LB **$4,428,964** (4 bidders) general constr. 6 story, bsmnt. HOSPITAL, Excelsior Blvd. east of Minnehaha Creek, ST. LOUIS PARK, MINN. Asbury Methodist Hospital, V. Spry, supt., 916 E. 15 St., Minneapolis, Minn. Bids Apr. 11. CD 2/27.

FAR WEST

BUILDINGS—BA

▲ **Calif., Fresno**—HOSPITAL—BA 6/1—Fresno Co. General Hospital, c/o Bd. Supervs., County Clerk, Court House, 6 story, ground floor, type I constr. rein.-con. hospital Cedar Ave. near Huntington St. $5,000,000. Horn & Mortland, 2016 Merced St., archts. CD 2/8.

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,

Johnson, Drake & Piper, Inc., 9009 San Leandro St., Oakland, Calif., CA **$4,935,599**. constr. full 8-lane freeway facility on viaduct section involving Madison St. undercrossing 6th St., outer viaduct 5th and overhead on Eastshore Freeway in Oakland between 0.25 mi. east of Fallon St. and 0.22 mi. west of Market St., Alameda Co. Bids 4/3, awarded 4/15, CD 4/5 under LB.

▲ **Vido Artukovich & Son, Inc., and Nick Bebek Constr. Co.**, 11555 Rush St., El Monte, Calif., LB **$2,082,493** (8 bidders) constr. 60,000 ft. 49 in. pipe feeder pipe line for Colorado River Aqueduct, Culver City, LOS ANGELES, CALIF. Metropolitan Water Dist. of Southern Calif., 303 W. 3rd St., Los Angeles, Calif. Bids Apr. 12. CD 3/25.

BUILDINGS—LB & CA

▲† **Paul Hardeman, Inc.**, 10955 W. Pico St., West Los Angeles, Calif., CA **$3,392,000**. expanded CORE FACILITY at Naval Reactor Facility, National Reactor Testing Station for Westinghouse Electric Corp., ARCO, IDAHO. Atomic Energy Comn., Idaho Operations Office, Idaho Falls, Idaho. Awarded Apr. 8. CD 3/13, under LB.

▲ **Jacobsen Constr. Co.**, 421 W. 13 St. S., Salt Lake City, Utah, CA Est. **$7,500,000**. phosphate rock processing and calcium metaphosphate mfg. PLANT, GEORGETOWN, IDAHO. Central Farmers Fertilizer Co., 608 S. Dearborn St., Chicago, Ill. Torkelson Eng. Co., 146 S.W. Temple St., Salt Lake City, Utah., engr. CD 10/31/55.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES
May 1 British Columbia

STREETS AND ROADS
April 30 British Columbia

BUILDINGS—SLC

▲ **Que., Shawinigan East**—PLANT—Shawinigan Chemical Ltd., Shawinigan Falls, soon lets contract Plant bldgs., incl. (1) liquefaction and HCl building (2) brine treatment plant (3) saturation pit (4) chlorine storage and loading bldg. (5) tank foundations and trenches; $3,500,000. Grattan D. Thompson, 1241 Guy St., Montreal, archt. Vickers Krebs Ltd., 4970 Notre Dame St. W., Montreal, engrs.

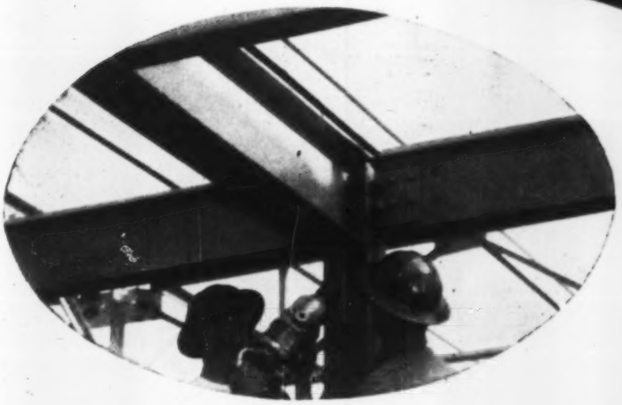
HEAVY CONSTRUCTION—LB & CA

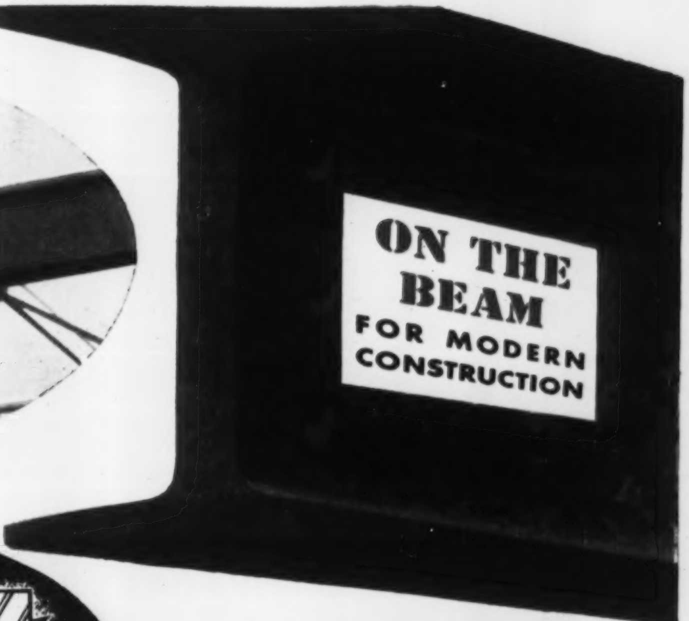
▲ **Perini Ltd.**, 248 Albert St., Ottawa, Ont., CA **$3,732,000**. air terminal bldg., Ottawa Airport, Uplands, OTTAWA, ONT. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids Mar. 12, awarded Apr. 10. CD 3/19, under LB.

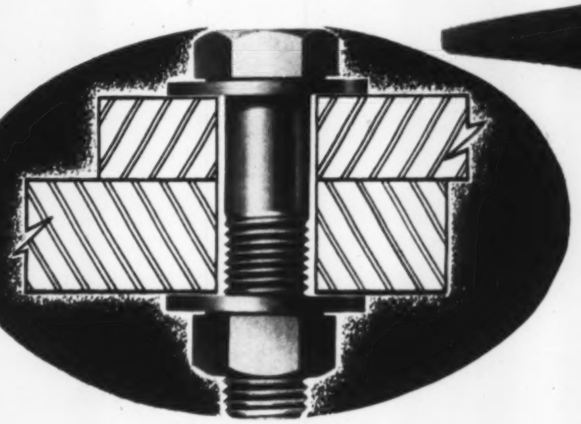
BUILDINGS—LB & CA

▲ **Bennett & White Constr. Co. Ltd.**, 660 Howe St., Vancouver, B. C. CA **$2,204,514**, rein.-con. David Thompson Secondary SCHOOL, 55 and Argyle Sts., VANCOUVER, B. C. Vancouver School Bd. 1595 W. 10 St., Vancouver, B. C. Bids Mar. 5, awarded Apr. 10. CD 3/29, under LB.

(Proposal Advertisements see pp. 138 to 140)




ON THE BEAM
FOR MODERN CONSTRUCTION

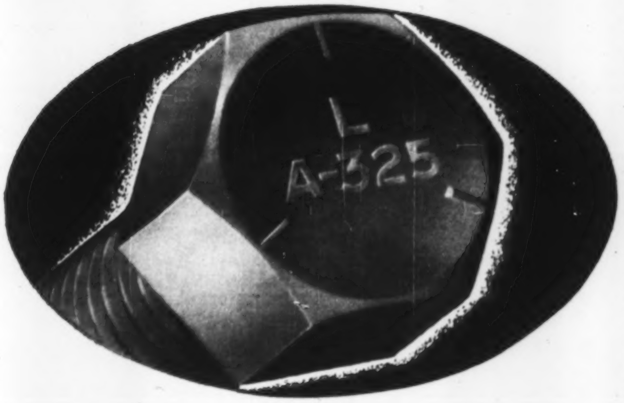


LAMSON
high-strength
STRUCTURAL BOLTS

The importance of knowing the brand and source of High-Strength Structural Bolts cannot be over-emphasized. Assurance of quality, dependability and top performance is a *must* with bolts used in structural steel construction.

Lamson High-Strength Bolts are made from specially selected steel to meet the rigid A. S. T. M. specifications and fulfill the requirements of all building inspection codes.

The "L A-325" on the head is a symbol of reliability and your guide to the finest High-Strength Bolts money can buy. Look for it . . . and be sure of getting Lamson & Sessions proven quality backed by 90 years of fastener experience.



Remember this head for dependable performance

THE LAMSON & SESSIONS CO.
1971 WEST 85th STREET • CLEVELAND 2, OHIO • PLANTS AT CLEVELAND AND KENT, OHIO • BIRMINGHAM • CHICAGO

Another Tough Protection Job—Solved by TARSET®

THIS oil company river barge terminal near Mt. Vernon, Ind. is a busy place. So busy, in fact, that wooden pilings soon break down under the wear and tear of heavy barge traffic.

Providing more durable docking facilities was accomplished by replacing the wood piling with cylindric steel cells, constructed with steel piling plates driven into the river bed and strengthened with a fill of washed sand and gravel.

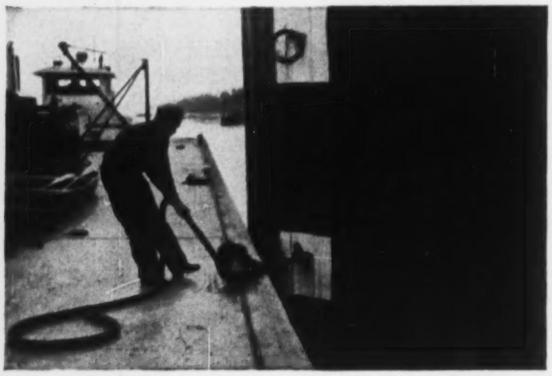
But the problem *then* was to protect the cells from corrosion, and from contact with the heavy barges.

Pitt Chem *Tarset* was selected for the job for two principal reasons:

1. *Tarset* is a unique and patented combination of coal tar and epoxy resin. In three years of service history, it has proven extremely resistant to severest moisture conditions.

2. *Tarset's* adhesion to metal is so great that it is virtually impossible to remove except by sand-blasting. So *Tarset* was ideal for resisting abrasion from barge movement.

What's *your* most troublesome corrosive material? Chemicals? Petroleum? Industrial Wastes? *Tarset* has an amazing performance record against all of them. • *Ask for complete information about revolutionary Tarset today! A letter or call will receive our prompt attention.*



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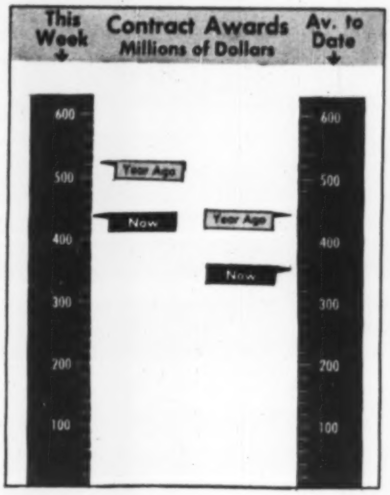
Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 17 wks 1957	Cum. 17 wks Chge %
	millions		
Federal	$44.2	$895.2	+55
State and Municipal	136.7	2,253.1	+11
Total Public	180.9	3,148.3	+21
Total Private	258.7	2,879.1	—43
U. S. Total	$439.6	$6,027.4	—21
By Type of Work			
Waterworks	$3.6	$103.2	+3
Sewerage	8.3	136.2	—37
Bridges	23.7	239.9	+24
Highways	37.3	923.0	+25
Earthwork, Waterways	7.9	347.4	+62
Buildings:			
Public, Excl. Housg.	69.7	727.8	+18
Public Housing	1.8	230.9	+75
Private Housing	81.9	978.7	—55
Commercial	60.9	583.3	—13
Industrial	110.9	1,131.5	—41
Unclassified	33.6	625.5	—4
U. S. Total	$439.6	$6,027.4	—21

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

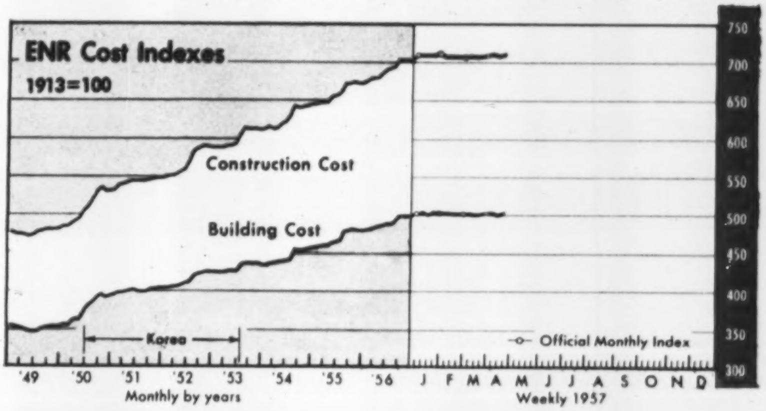
NEW CAPITAL FOR CONSTRUCTION

	Week of Apr. 18	Cum. 16 wks 1957	Cum. 16 wks Chge '56-'57 %
	millions		
Corporate Securities	$87.8	$2,099.8	+111
State and Municipal:			
All Except Housing	161.5	1,772.0	+25
Housing	...	41.5	+104
Federal Loans	14.4	55.1	+51
Federal Aid	...	...	...
Total Nonfederal	$263.7	$3,968.4	+61
Federal Appropriations:			
In U. S.	...	...	—100
Outside U. S.	...	...	...
Total New Capital	$263.7	$3,968.4	+59

Cost Indexes as of Now

ENR INDEXES (1913=100), 20-cities' average	Week of April 18 1957	% Change from March 21 1957	% Change from April 19 1956
Construction Cost	710.70	+0.2	+4.0
Building Cost	501.57	+0.1	+3.2

To convert above indexes to 1926=100: Divide Construction Cost by 2.080; Building Cost by 1.850
1949=100: Divide Construction Cost by 4.770; Building Cost by 3.518



BACKLOG OF PROPOSED HEAVY CONSTRUCTION

	Mar. 31 1957 (millions)	Percent Change from last Month	Percent Change from last Year
Total U. S. (ENR reported)	$106,204	+0.5	+8.6
By Ownership—			
Private	44,783	+0.6	+8.8
State & Municipal	47,954	+0.5	+10.6
Federal	13,467	−0.05	+4.7
By Type of Work—			
Waterworks	2,256	+0.6	+10.1
Sewerage	3,292	+1.2	+9.1
Bridges	3,063	−0.1	+8.3
Highways	13,164	+0.1	+14.2
Earthwork, Waterways	11,242	−0.8	−1.2
Public Buildings, including Public Housing	19,208	+1.7	+12.0
Industrial Buildings	16,340	+1.3	+5.7
Commercial Buildings, incl. Private Housing	19,021	+0.2	+16.2
Unclassified, Private	9,422*	+0.3	+0.8
Unclassified, Public	9,196	−0.6	+6.7

* Includes private bridges, $88 million

FLOW OF NEW PROJECTS INTO THE BACKLOG

	1957 Mar. (millions)	1957 3-months (millions)	Percent Change from last Month	Percent Change from last Year Cum.
Total U. S. (ENR reported)	$1,749	$5,871	+13.6	−26.8
By Ownership—				
Private	871	3,074	− 0.8	−20.9
State & Municipal	692	2,494	+14.6	−31.2
Federal	186	303	+225.0	−40.2
By Type of Work—				
Waterworks	44	108	+102.1	−5.6
Sewerage	70	186	+64.7	+51.5
Bridges	10	169	−14.8	− 6.0
Highways	147	920	−20.0	+223.9
Earthwork, Waterways	2	58	−96.7	−84.3
Public Buildings, incl. Housing	513	1,110	+78.0	−22.6
Industrial Buildings	447	1,159	+51.8	−39.8
Commercial: Mass Housing	136	843	−24.9	− 2.2
Other Building	246	817	−25.8	+16.3
Unclassified, Private	42	256	−40.6	−43.7
Unclassified, Public	93	245	+32.3	−84.9

FLOW OF PROJECTS OUT OF BACKLOG INTO CONTRACTS

	1957 Mar. (millions)	1957 3-months (millions)	Percent Change from last Month	Percent Change from last Year Cum.
Total U. S. (ENR reported)	$778	$2,420	− 4	− 1
By Ownership—				
Private	273	951	−31	−29
State and Municipal	324	1,069	+ 1	+34
Federal	181	400	+96	+36

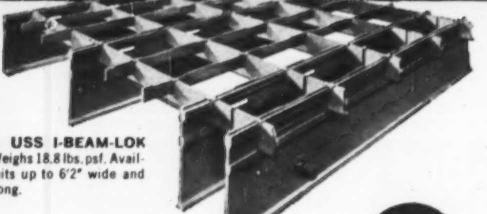
Reflooring with USS I-BEAM-LOK *solves maintenance problem!*

THIS OLD BRIDGE at Milton, Pa., was a headache to the Pennsylvania Highway Department. Its heavy concrete slab roadway had been repaired so many times that it was 10 to 12 inches thick on some spans. Its 17′6″ roadway was too narrow. And to make matters worse, the bridge had a curve in it! All of which compounded the problems of dead load, maintenance and safety.

A quick, permanent, weight-saving and money-saving solution to the Milton Bridge problem was found by reflooring with 32,420 sq. ft. of USS AmBridge I-Beam-Lok, the use of which also contributed to the splicing of beams to permit widening 8 spans of the roadway, as well as the fanning out of 3 spans on a curve.

In commenting on this phase of the modernization, Mr. Sanford H. High of the High Welding Company, contractor, says: "The 5″ open-type I-Beam-Lok on this job proved particularly advantageous. It not only provided an easy-to-maintain, all-weather roadway, but also facilitated the widening of the spans because we could lay sections of the flooring temporarily where needed and work from them while cutting and splicing beams. We really moved right along on this job, thanks to the easy way I-Beam-Lok handled."

If you are interested in learning more about USS AmBridge I-Beam-Lok—the modern, lightweight steel flooring—we will be glad to send you our 32-page catalog. Please address your inquiry to the Pittsburgh office.



Open-type **USS I-BEAM-LOK**
5″ depth. Weighs 18.8 lbs. psf. Available in units up to 6′2″ wide and up to 49′ long.

Pennsylvania Department of Highways, Harrisburg, Pa.
Contractor: High Welding Company, Lancaster, Pa.
Sanford H. High, President

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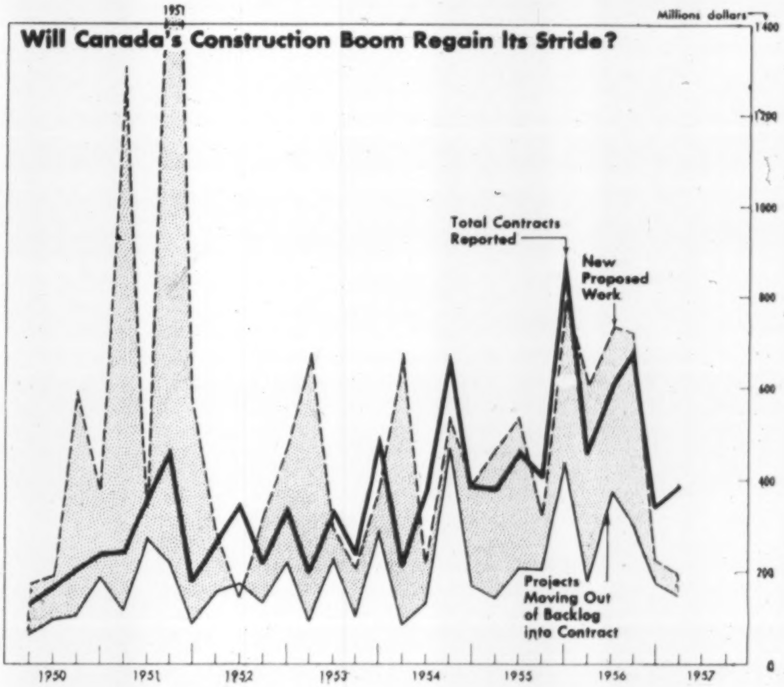
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS AMBRIDGE I-BEAM-LOK BRIDGE FLOORING

UNITED STATES STEEL



Will Canada's Construction Boom Regain Its Stride?

Canadian Awards Down

Contract awards for heavy construction in Canada, as reported by ENGINEERING NEWS-RECORD, closely followed the pattern set in the United States.

Awards of $392 million were down 16% from the same period in 1956, principally because of a 32% drop in awards for private construction. Private awards totaled $219 million.

Public works forged ahead in Canada in the first quarter, just as in the United States. At $173 million, Canadian awards for public work ran 17% ahead of the first quarter of 1956.

But there were important differences between the two nations. For example, in Canada contract awards for industrial buildings were 26% ahead of last year. The U.S. showed a 37% drop in the first quarter. And, highway projects are down in Canada by 36%, while in the United States, first quarter highway awards ran 28% ahead of last year. There was a first quarter drop of 35% for public building awards in Canada; in the United States, this type of work is up.

However both nations show good gains over 1956 for earthwork and irrigation projects, waterworks and public bridges.

Canada's first quarter contracts are up 14% over the low fourth quarter of 1956. But, there has been a sharp decline in new proposed work entering the backlog. This might indicate less contract award activity in the future. At $198 million, the amount of new proposed work entering the backlog in the first quarter was the lowest since the first quarter of 1952 (see chart).

Outflow of projects from the backlog into contracts also has slowed to $147 million, lowest since the first quarter of 1955.

Delay for Tollroad

Defer marketing of bonds; interstate route competes with turnpike extension

The federal interstate highway program in Florida may jeopardize an extension of the new Fort Pierce to Miami tollroad. The planned extension would run 279 miles from Fort Pierce to a point near the Georgia border.

Plans for marketing of $185 million in bonds to finance the extension were deferred by Florida Turnpike Authority Chairman Thomas B. Manuel after traffic and earnings engineers advised the authority that "competition from the proposed interstate system in Florida, if constructed as presently planned, would reduce previously estimated earnings of the Florida turnpike."

• **Disappointing, but not final**—On the basis of this report, the authority asked its financial advisers to delay plans for sale of the bonds "until such time as we have had an opportunity to coordinate our plans with those of the State Road Department." The authority called the traffic engineers' report "disappointing, but by no means final," adding that the State Road Department "has repeatedly stated that we need both the turnpike and the interstate system."

The planned turnpike extension would take the tollroad northwest from Fort Pierce along a route just west of Orlando, then through central Florida northeastward to Tisonia.

Meanwhile, the State Road Department reported its achievements during the past two years.

The department said that during this period it completed 2,455 miles of highways and 72,006 feet of bridges at a cost of $148.1 million. Sixty-four miles of the four-laning of U.S. 1 have been completed, the road department said, and 130 miles are under construction.

For the entire state, 114 miles of four-lane work was completed in the biennium with another 250 miles under way. When completed, the 365 miles of four-laning started during the past two years will bring Florida's total of four-lane highways to 715 miles.

Demand Eases

Cement shipments down, January production cut

Cement mills shipped 11% less portland cement in January of this year than they did in January 1956. Shipments totaled 11.8 million barrels, according to the U.S. Bureau of Mines. Apparent consumption of cement (as judged by shipments) was higher than a year ago in 12 states, lower in 36.

The drop in shipments probably reflects two factors: Poor weather in January throughout most of the nation compelled contractors to change construction schedules; and the decline in contracts in late 1956 and through January 1957 resulted in less demand.

With shipments declining at a faster than seasonal rate, cement mills trimmed production schedules. They produced 19.3 million barrels in January, operating at 71% of mill capacity, as against an operating rate of 80% in January 1956.

Cement storage silos bulged with 29.8 million barrels of cement. By the end of January stocks were 17% greater than a year ago and were nearly equal to the record high set in March 1956.

For suppliers, the buildup in stocks could dampen enthusiasm over the year's sales prospects. But, for contractors the buildup in inventories points to an easier supply situation in the first half of this year, compared with the same period in 1956.

While contracts for heavy construction other than building are hitting new highs, cement demand for these jobs will not reach a peak until late summer. And, until then cement supplies should be more than adequate to meet demand.

It's also possible that a continuing lag in cement shipments would temper the cement industry's plans for price increases, particularly for the third quarter.

(B&F continued on page 134)

Construction Markets

San Diego: An On-the-Spot Report

San Diego, Calif., once dependent on aviation, sailors and sightseers, is coming of age industrially and the area's current building boom seems destined to continue at least through the next four to six months, probably longer.

Southern California's second largest city shapes up as a strong construction market. With industrial building and public works projects leading the way, San Diego is ready to employ labor, buy materials and equipment and retain contractors, engineers and architects' services on an unprecedented scale.

There's one hitch—a familiar one, "tight money." But its effects are felt most in the housing field where the need for new homes is critical and financing is precarious. Some industrial building and some public works projects also are affected, but principally from a standpoint of timing.

San Diego expects its boom to continue despite tight money, a housing shortage, and rising costs of materials, labor and land.

There are good reasons for the boom. One of the fastest-growing metropolitan areas in the nation, San Diego is experiencing the largest peacetime population growth in its history.

This growth has created the need for a $35 million city sewage system (bonds passed); a $35 million second San Diego Aqueduct within the county (bonds being voted upon July 9); some $30 million being expended annually for privately owned utilities; a $25 million city schoolbuilding program (started); other school expansion including $20 million in state funds already earmarked for San Diego State College; some $35 million in freeways, state highways and city street improvements; more than $20 million for two hospitals alone (one under construction); a $9 million port facility (under way); an $8 million courthouse (to start this summer); and plans for a South Bay seadrome and new airport.

A comparable construction program is taking place in industry and in expansion of retail facilities to keep pace with a population that has more than doubled since 1940.

This phenomenal growth has exacerbated the city's housing shortage. Homebuilding is doing well in one sense (contracts are more than 30% ahead of a year ago), but builders claim they cannot get the financing needed to overcome the housing shortage. With credit tight, they say that investors are putting their funds into industrial building.

"We'll hold our own during the next four months," Charles Taylor, executive vice president of the San Diego Contractors and Builders Association, says of housing. But he believes the housing shortage will persist as long as money is hard to get, costs are high and population increases.

Homebuilders face a new round of wage demands May 1 when many of the present building trades contracts expire. If substantial wage increases are granted, builders say this will raise costs and prices, making home financing that much more difficult.

Even so, the housing outlook has a brighter side. San Diego has received an advance commitment from the Federal National Mortgage Association under which Fannie Mae has agreed to take mortgages for $10 million worth of multiple dwelling units. The action will permit immediate construction of at least 1,000 units, according to Ralph Phillips, president of the San Diego Chamber of Commerce.

San Diego's other major problem in the past was its narrow economic base. Dependence on the Navy and aviation industry put the area in a position where a sudden turn in international events could produce widespread unemployment and halt construction programs. This situation is being remedied. An Industrial Development Commission is setting up a master plan for industrial development.

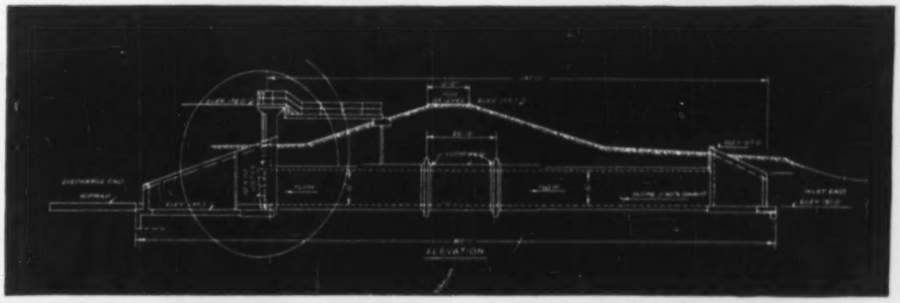
The need for such a program becomes apparent when the Development Commission chairman points out that only 8.3% of San Diego County's population is engaged in manufacturing as against 14% in Los Angeles.

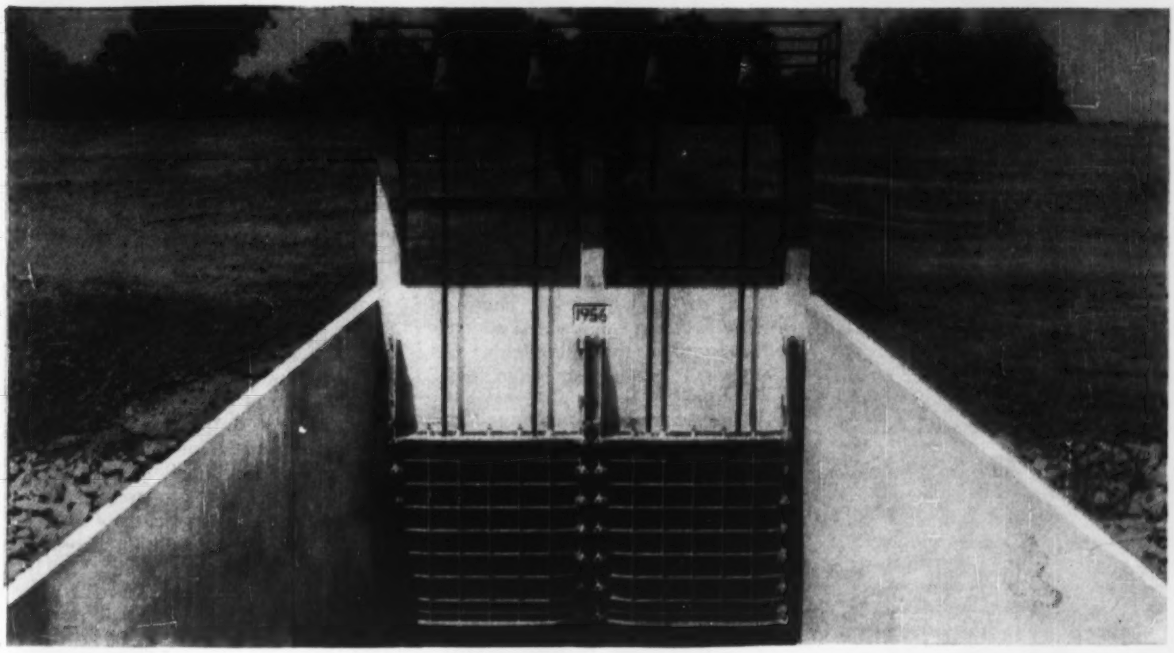
Meanwhile, new industries, such as electronics and plastics, are coming to San Diego. And, the city should gain still further in the nuclear age if plans materialize for a scientific and technical branch of the University of California, as well as the imminent $12 million John J. Hopkins Laboratory for Atomic Research.

General Dynamics, parent concern of the Hopkins Lab and Convair, has further diversified local industry by choosing San Diego as the site for the largest project now being built in the city—the $40 million astronautics plant for missile development. Convair and other major aircraft companies are continuing to expand.

Downtown San Diego is seeking solutions to its bus transit problem and is studying plans for a parking district. And, two companies have announced plans for large buildings (both over $2 million), the first such major improvements in the downtown business district in years.

The city's labor supply has been augmented by newcomers from other states, as total employment in industry increases by about 10% a year. If San Diego can continue to attract new residents (and find housing for them), the construction market should be good not only for the next four to six months but for a long time to come.





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Upturn Aids Mills

Fir plywood market firms; orders set 15 week record

Douglas fir plywood mills are riding a wave of new orders.

Bookings have increased sharply in the past five weeks and order backlogs now are the highest since last October, according to Douglas Fir Plywood Association figures.

This rise in orders has pushed the 15 week total in 1957 to nearly 1.5 billion sq ft (on a ⅜ in. rough basis). That's a 3% increase over the 1956 period and is a slight 0.4% more than 1955's previous high for the period.

Total backlog of orders, as of April 13, was slightly more than 350 million sq ft.

Mills have increased production sharply to match the upturn in orders. During the first week of March, mills operated at a low 73% of capacity; during the week ended April 13, mills raised their output by operating at 86.8% of capacity.

Production during the week ended April 13 totaled 108.1 million sq ft, slightly higher than in the corresponding week of 1956. However, total production to date in 1957 is lagging 6.3% behind last year's all-time high. During the first 15 weeks of the year, Douglas fir plywood mills produced a total of 1.48 billion sq ft.

Exterior plywood production is down 5.8% from the comparable 15 week period in 1956, but it tops 1955 by more than 7%.

Port Authority Suggested For State of Mississippi

Creation of a Mississippi Ports Authority, under which the state would assume ownership and operation of all ports that are located on the Gulf Coast and on the Mississippi River, has been recommended by a legislative port study committee, which will make a formal report to the full legislature next January.

The committee calls for a $15 million bond issue for development of the port at Gulfport, but makes no specific recommendation at this time on the port at Pascagoula, where Jackson County and the City of Pascagoula currently are engaged in a $4.5 million development program.

Under the proposal, a seven member port authority would be appointed by the governor to oversee development of all state owned ports.

A State Dock Board also would be established if citizens of Gulfport and Pascagoula voted to turn their facilities over to the state.

Bonds for development of the port at Gulfport would be issued by the Dock Board, subject to approval of the Port Authority, and would be retired from revenue derived from operation of the docks.

$15 Million Cement Plant Planned by Public Utility

A $15 million cement plant, with an annual capacity of 1.5 million barrels, will be built at Foreman, Ark., by the Arkansas Louisiana Gas Co.

The plant will be built by a wholly owned subsidiary and will be in operation in about 18 months.

The gas company became interested in operation of a cement plant because the plant would use natural gas in warm weather, when the utility's customers normally require less service. The plant will give Arkansas Louisiana Gas a daily market for about 10 million cubic feet of gas which it has been forced to sell at bargain rates in the past as "dump gas."

The site of the plant, at Foreman, is 185 miles from Little Rock, in southwest Arkansas, near the Oklahoma and Texas borders. The site was chosen because of extensive deposits of chalk formations in a 2,000 acre tract.

Novices Called Major Factor In Contractor Failure Rate

A major factor in the rising rate of failures among construction contractors "is the bloody and destructive competition set off frequently by novices —the tyros in the business," according to a recognized surety expert.

Warren N. Gaffney, General Manager of the Surety Association of America, voiced his criticism of inexperienced contractors during a meeting of the National Association of Surety Bond Producers.

Pointing out that not all contractors who fail are bonded, Mr. Gaffney said that contract bond losses alone totaled $32 million in 1954 and $44 million in 1955. (These compare with current liabilities reported by Dun & Bradstreet of $56.8 million in 1954; $83.2 million in 1955 and $100.2 million in 1956 Contract bond losses for 1956 are not yet available.)

Figures showing contractor failures also do not include contractors who received financial assistance from the sureties in order to complete a job, and thereby avoid a default, Mr. Gaffney explained. Yet, these too have been victims of the bitter competition in many cases, he added.

Highway Cost Index Up Sharply in California

The California Highway Construction Cost Index rose sharply in the first quarter. The index stands at 277.7 (1940-100), which is 25.5 index points, or 10.1% above the fourth quarter of 1956. Compared with the same period in 1956, the index shows a 22% increase in construction costs.

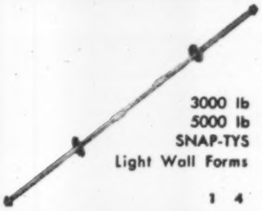
However, the State Highway Department commented that the sharp rise in the first quarter of this year was due partly to "conditions surrounding two extremely large contracts totaling $12.2 million that were awarded during the period." Unusual problems encountered on these two projects distorted the cost picture, the department said. Excluding these two projects, the index actually would have been 1% below the fourth quarter of 1956.

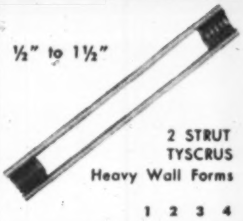
Business Briefs . . .

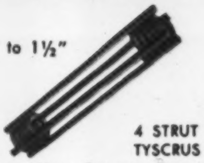
- **New York housing down**—A 38% decline in new private housing units authorized or started in New York State was reported for February. State Housing Commissioner, Joseph P. McMurray, said 2,798 units were authorized or started during February of this year as against 4,485 units in February 1956. The figure for February 1957 represented the lowest amount of new homebuilding activity for that month in the past eight years.
- **DuPont increases spending**—Construction expenditures of the duPont Co. this year probably would be at a higher level "perhaps over $200 million" than the all-time record of $157 million in 1956, Crawford H. Greenewalt, president, told stockholders last week.
- **Equipment maker expands**—A new West Coast plant of Yale & Towne's Materials Handling Division will start production in August of the Trojan line of earth-moving equipment now manufactured only at the contractor's Machinery Division plant at Batavia, N. Y. The new plant will also produce fork lift trucks.
- **Slum clearance bill**—The North Carolina legislature has started action on a bill that would give all cities and towns in the state power to condemn and resell or rehabilitate slum areas when two-thirds of the buildings in the area are substandard.
- **Close competition**—A bid margin of 87,432 less than 1%—on a $10 million contract—separated low bidder Peter Kiewit Sons from second low Western Contracting Corp. for a runway improvement job at Minot, N. D. Air Force Base.

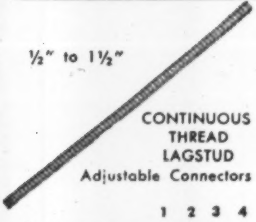
RICHMOND REFERENCE GUIDE FOR YOUR CONCRETE CONSTRUCTION NEEDS

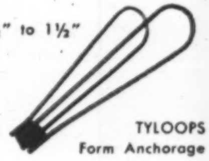
CUT OUT AND FILE

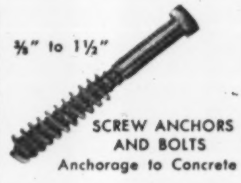

3000 lb
5000 lb
SNAP-TYS
Light Wall Forms
1 4

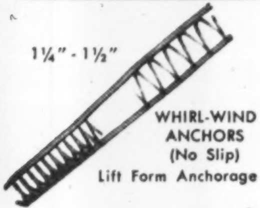

½" to 1½"
2 STRUT TYSCRUS
Heavy Wall Forms
1 2 3 4

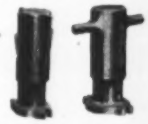

1" to 1½"
4 STRUT TYSCRUS
Mass Concrete Forms
2 3


½" to 1½"
CONTINUOUS THREAD LAGSTUD
Adjustable Connectors
1 2 3 4

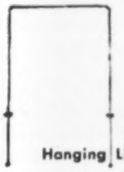

½" to 1½"
TYLOOPS
Form Anchorage
3

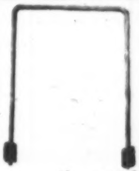

⅜" to 1½"
SCREW ANCHORS AND BOLTS
Anchorage to Concrete
2 3

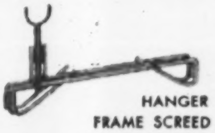

1¼" - 1½"
WHIRL-WIND ANCHORS
(No Slip)
Lift Form Anchorage
3


¼" to ¾"
THREADED INSERTS
Fastening to Concrete
1 2 3 4

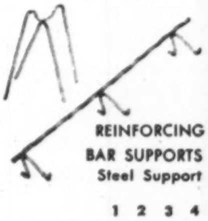
⅝" - ¾"
PEERLESS WEDGE INSERT
Shelf Angle Support
1

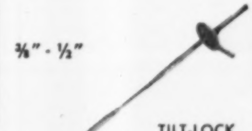

SNAP-TY HANGER
Hanging Light Forms
1 4

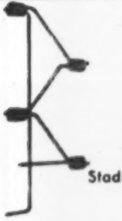

½" to 1
TYHANGER
Hanging Heavy Forms
1 2 4

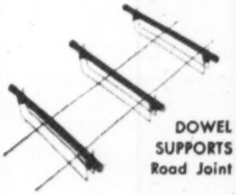

HANGER FRAME SCREED
Form Hanging and Screeding
2

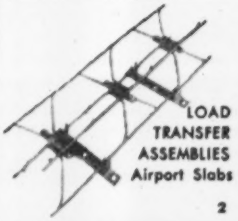
ADJUSTABLE SCREED CHAIR
Screeding Slabs
1 2 4


REINFORCING BAR SUPPORTS
Steel Support
1 2 3 4


⅜" - ½"
TILT-LOCK ASSEMBLIES
Fast Acting She-Bolts
2 3 4


TYFRAME
Stadium Forms
1


DOWEL SUPPORTS
Road Joint
2


LOAD TRANSFER ASSEMBLIES
Airport Slabs
2

buildings ①

roads & bridges ②

tunnels & dams ③

water & sewage PLANTS ④

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Labor

Teamsters Condemn Beck Suspension

Union's Executive Board challenges the validity of AFL-CIO action, but Meany remains unmoved

While Senate investigators were turning attention last week to building trades' activity in Scranton, Pa., top brass of the teamsters union gathered in Texas to consolidate their forces.

Meeting in Galveston, the union's Executive Board unanimously condemned as illegal the AFL-CIO suspension of teamster chief Dave Beck as federation vice president and council member, and charged the AFL-CIO's pending investigation of the union on corruption charges, as now set up, violates the union's right to a fair trial.

Result of the action is to widen the cleavage—both legal and ideological—between the teamsters and the AFL-CIO. And this, in turn, more clearly places the ultimate decision on the fate of both Mr. Beck and his union on the shoulders of rank-and-file members.

Tactical in nature, the Galveston meeting was called to chart the union's course in the hearings scheduled by the AFL-CIO following Mr. Beck's recent refusal to answer questions before the Senate investigating committee. First hearing, set for May 6, is concerned with the question of whether corruption exists among the teamsters and, if so, whether it is sufficient to suspend or expel the union from the AFL-CIO. The second hearing relates to Mr. Beck's fitness to continue as an officer of the AFL-CIO and is scheduled for May 20. (Mr. Beck's status within the teamsters union itself cannot be directly controlled by the federation.)

Decisions taken at the Galveston meeting were two:

- To appoint a committee to confer with the AFL-CIO on the May 20 hearing.
- To refuse to appear at the May 6 hearing unless and until procedural changes—such as formal written charges, the right to confront accusers and the right to cross examine—are made.

In reply to the teamsters' action, AFL-CIO President George Meany stated that the hearings would stand as scheduled and indicated that the federation will not compromise its position by bargaining with the teamsters.

• Cleavage—On both fronts, a sharp line again has been drawn between personal legal rights and the enforcement of trade union morality.

Teamster officials have expressed the view that the Bill of Rights, like the Magna Charta, sought to protect the individual against despotism and tyranny. It not only prevents Congress and the AFL-CIO from conducting inquisitions and Star Chamber proceedings, they contend, but also makes unlawful the AFL-CIO code under which unionists who invoke the Fifth Amendment can be ousted from office. Coupled with this is a union emphasis on the legal concepts that individuals cannot be tried in a prejudicial atmosphere or by biased judges and that the presumption of innocence prevails until guilt is proven.

Mr. Meany, on the other hand, has indicated that the legal rights of an individual as a citizen cannot be the controlling factor in the federation's enforcement of its "own law of trade union ethics." The AFL-CIO codes, he has said, seek to assure that the labor movement conforms to the highest concepts of morality, and, as a "practical" matter, are designed to guard labor against the "risk of adverse publicity." In fulfilling its pledge to keep the labor movement free from corrupt influences, Mr. Meany has observed, the AFL-CIO must proceed under its own law, often acting before public law has run its course and leaving the questions of constitutional rights and of individual guilt or innocence under public laws to be settled within the framework of the nation's judicial system.

• Rank-and-file—Even more significant are the divergent views on the crucial role to be played by union members at the grass-roots level. For these are the people who may be asked to decide whether the teamsters will cross the Rubicon by giving office to or withholding it from those members touched by the taint of corruption.

In an open letter in the April issue of the teamsters' journal, Mr. Beck, who plans to run for re-election, infers that there is no discontent among rank-and-file members over the way union matters are being handled because teamsters are satisfied with the results—wages that mean an annual income $600 higher than it was five years ago, better fringe benefits, shorter hours and, in some cases, work or wage guarantees.

Mr. Meany, however, has said he does not "subscribe" to such a thesis and at the recent auto workers' convention predicted that the American worker's interest in his union and in what it stands for will rise above a purely economic evaluation.

But members of Sen. John McClellan's investigating committee have begun to publicly question which way the wind will blow. Last week's hearings underscored the fact that four convicted construction union members in Scranton still hold union office. Said Senator McClellan: "I'm interested in knowing what's going to be done about convicted criminals who are officers of unions." Are they, he asked, going to remain in the union?

Should the retention of such officers become the practice in the teamsters union, it may lead to the union's expulsion from the AFL-CIO. So far, however, teamster leaders have disavowed any intention of becoming an independent union.

And this leads to another dilemma with which the AFL-CIO soon may be faced. Al Hayes, who heads the federation's Ethical Practices Committee, has made this observation: "In a very real sense, the expulsion of a wayward affiliate from the AFL-CIO does not solve the problem of unethical practices at all. It is sort of a handwashing ritual . . . the situation continues to exist." Real remedy, he declared, lies in arousing union members to exercise their rights—a remedy which expulsion itself may not promote.

District Fifty Attacks Taft-Hartley Proposals

A sharp attack on the construction industry's proposed amendments to the Taft-Hartley Act has been made by the United Mine Workers' District 50, which embraces the construction workers' division of John L. Lewis' independent union.

In an editorial in a recent issue of its official publication, District 50 asserts that the proposals "would give Brother Gray and his building trades 'empire' about as tidy a little monopoly as one could hope to find anywhere". Mr. Gray is president of the AFL-CIO Building and Construction Trades Department.

The proposal singled out for special criticism is one that would permit certification of construction unions without prior elections, provided there is an existing history of collective bargaining between the union and the employer (ENR Mar. 28, p. 117). According to District 50 this proviso would present an effective roadblock to the continued expansion of its United Construction Workers because UCW in many instances wouldn't be able to meet that requirement. The result, it says, is to give the AFL-CIO building trades a monopoly, while leaving the shackles of the law on their rival union.

District 50 also argues that "this is no time for amendments" because of the anti-labor atmosphere created by the Senate Select Committee investigations. It considers it unlikely that Congress would be in a mood to limit its consideration to the industry proposals.

Apprentice Deficit Still Exists

Sheet metal workers score the highest mark, but many trades are failing to meet their journeymen losses

While the construction industry in Montreal is building what may be the biggest apprenticeship training center in the world, U. S. contractors and construction unions are finding little room for complacency in the net results of their own efforts to add new members to the skilled labor force.

According to the U. S. Labor Department's Bureau of Apprenticeship and Training, the number of apprentices turned out last year by the carpenters, iron workers, cement masons, painters, paperhangers and glaziers, for example, fell far short of replacing journeymen lost to the trades through death, retirement and disability. This occurred in the face of the construction industry's continuing need for additional craftsmen, now significantly bolstered by scheduled expansions in the highway and heavy construction fields.

• **The 1956 picture**—Taking the industry as a whole, however, the over-all picture for 1956 is not so bleak. The year marked a general improvement in the balance between apprentices and journeymen in the building trades.

Here are some of the 1956 highlights as reported by Carl Easton in the March issue of "Construction Review", published by the U. S. Departments of Labor and Commerce:

• Best record was made by the sheet metal workers union, in which apprenticeship completions were twice as great as the number of journeymen lost—the union now has a ratio of one apprentice to every seven journeymen. Electrical workers and roofers starred next. These three trades accounted for more than a quarter of all construction trades apprentices registered in mid-1956.

• The bricklayers—now shooting for a ratio of one apprentice to every five journeymen—ended up with more than enough apprentice graduates to replace their journeymen losses, and the plumbers and pipefitters just held their own. But plasterers and cement masons failed to cover their losses even though they had improved their ratio of apprentices to journeymen (it's now 1 to 12.6).

• Over the last five years, carpenters have been losing twice as many journeymen as they've been getting through apprenticeship, and in the painting and paperhanging trades journeymen losses have exceeded apprenticeship completions by three to one.

• **Other pressures**—In addtion to filling the gaps that naturally occur in labor's ranks as well as as meeting the numerical needs of a more demanding future, contractors and unions are, meanwhile, trying to keep abreast of the changes in technology and tastes that require constant revisions in training.

The bricklayers, for example, now see a shortage of stone masons stemming from the increasing use of building stone. Since they feel that in many communities the amount of available work does not warrant the training of an exclusive stone mason apprentice, officers of the International Union are urging mixed locals to see that bricklaying apprentices are given some practical and related training in stone masonry. They also are urging the promotion of full stone masonry apprenticeship, where practicable, and the use of stone masonry extension courses for journeymen bricklayers.

Pushed by the pride of craftsmanship and the economic incentives of self-preservation, better jobs and higher pay, other unions are also emphasizing journeymen training. Addressing himself to this problem and to the new jobs that flow from modern electrical methods, Gordon Freeman, President of the International Brotherhood of Electrical Workers, last month had this to say to his members: "These jobs belong to us—but—only if we are ready for them. If we are not ready for them, if we are passed by now because we lack the ability, if we miss this chance to get in on the ground floor, we may never get another opportunity. We must not, we cannot, let a comparatively few hours of advanced training cheat us of such opportunities. The time to act is now."

• **Montreal enterprise**—To obtain the physical facilities for coping with their own apprenticeship problem, the Montreal construction industry and the provincial government have launched a $1.1 million expansion of the Montreal Apprenticeship Center of the Building Trades. Three new additions now are being built and a recreation center is being planned.

Cooperating in the enterprise are the Builders' Exchange and the Apprenticeship Commission. The commission is a corporation established under the Apprenticeship Assistance Act. Its 23 members represent management and labor (10 members each) and the Quebec government (three members). Purpose of the corporation is to provide apprentices with vocational training facilities and to promote apprenticeship standards in the building trades.

Pre-employment vocational training is given by the Montreal center to apprentices in the 16-25 year-old group in bricklaying, carpentry, electricity, sheet metal, painting, plastering, plumbing, heating, refrigeration, welding and tile setting.

Industrial Union Dispute

The AFL-CIO has put the brakes on efforts of the sheet metal workers union to gain jurisdiction over work performed by steelworkers at Burt Manufacturing Co. in Akron, Ohio.

Another manifestation of the craft-industrial union conflict that has plagued the AFL-CIO merger, the jurisdictional dispute has been brewing for over a year. Ventilators and other products produced by Burt have been boycotted by the sheet metal workers (ENR Feb. 7, p. 136). The AFL-CIO Executive Council, at its mid-winter meeting in Miami, appointed a three-man committee to recommend a solution. That committee now has ruled that the sheet metal workers' action constitutes union raiding and violates the AFL-CIO constitution.

(Labor continued on page 138)

Seek Ban on Part-Time Jobs for City Workers

The conflict of interest between AFL-CIO building tradesmen and city employees seeking part-time work during their off-duty hours is being aired again—this time in Cincinnati, Ohio.

The Cincinnati Building and Construction Trades Council has requested an ordinance prohibiting municipal employees from doing outside work.

Joining the opposition to the union request, City Manager C. A. Harrell has taken the position that city workers "should be able to use their free time to their own advantage on an equal basis with employees of private industry." He cited the following figures in answer to BTC charges that outside jobs for city employees work a hardship on the unemployed: Of the 642 municipal workers who have had outside jobs recently, 78 were Christmas season workers, 83 worked less than eight hours each week, and only 22 obtained jobs in the building industry.

Bulk of Labor Disputes Are Settled Peacefully

Arbitration clauses are now included in 95% of all the 125,000 collective bargaining agreements in effect, a group of labor relations officials was told this month at an arbitration institute held at Vanderbilt University, Nashville.

This means that tens of thousands of labor disputes, the majority of which concern discipline and discharge, are arbitrated every year, according to Joseph S. Murphy, vice president of the American Arbitration Association.

The arbitration institute, first of its kind in Tennessee, was sponsored by the American Arbitration Association and the Vanderbilt Law School. Delegates from 36 cities in four states attended.

Mr. Murphy said that "strikes make good newspaper copy while peaceful settlements get little or no attention," thus accounting for "the lack of public awareness of the growth of the peaceful settlement method."

During the course of the institute Federal Mediator Joseph Finnegan said the stress by the Eisenhower Administration on voluntary mediation and arbitration has strengthened the ability of the Federal Mediation and Conciliation Service to resolve disputes. "The mediator is often of assistance in aiding one party or the other to retreat from an over-extended tactical bargaining situation," Mr. Finnegan said. The key to settlement, he stated, is often simply that of having someone to help "to do it gracefully."

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SPECIFICATIONS NO. PA-6-38
CONTRACT NO. TP7

NOTICE TO CONTRACTORS: THE POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the shop detailing, fabrication, and furnishing of structural steel for the substations for the Barnhart-Plattsburgh Transmission Project and delivery thereof f.o.b. destinations, until 10:30 A.M., Eastern Daylight Saving Time, on the 7th day of May, 1957, at the Authority's office, 270 Broadway, Room 1305, New York, New York, at which time and place the proposals will be publicly opened and read aloud.

Bids will be received for the structural steel for the Plattsburgh and Kents Falls Substations in accordance with the bidding schedules. Estimated quantity for Plattsburgh Substation 80 tons; for Kents Falls Substation 45 tons. Erection at the site of installation will be done by Others. Delivery will be required starting September 15, 1957.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts; may be inspected by prospective bidders during office hours; and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Ten ($10.00) Dollars per initial set of contract documents and Five ($5.00) Dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids will not be restricted to American Manufacturers.

Bids must be made in duplicate in accordance with the instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than ten per cent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4897) will be received at Vernal, Utah, until June 4, 1957, for furnishing labor and materials for highway, streets, utilities, and residences for Flaming Gorge Community Facilities, Colorado River Storage Project, Utah-Wyoming. Location near Linwood, Utah. Principal items are 325,000 cu. yds. excavation for highway, streets, residences, and utility trenches; constructing 80 wood-frame residences; constructing sewage, gas line, water, and electrical distribution systems; and other work. Completion time 550 days. For particulars, address Bureau of Reclamation, Vernal, Utah; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

Bids: May 21, 1957.

City of Richmond, Virginia

NOTICE TO BIDDERS

Sealed Proposals will be received at the office of the Director, Purchases and General Services, 4th floor, Mosque Building, Laurel and Main Streets, Richmond, Virginia, until but not later than 11 o'clock A. M. E.S.T., May 21, 1957, at which time they will be publicly opened and read aloud, for the following work which may be awarded in whole or in part:

Type of Work: The work to be done is part of the Sewage Disposal Project, is entitled "Division V—Outside Piping and Miscellaneous Structures", and comprises the furnishing of all labor, materials, equipment and work incidental thereto for the construction of the sludge beds, sludge lagoons, outside piping, railroad siding and miscellaneous structures, as shown, specified and directed.

Location: The Outside Piping and Miscellaneous structures will be located at the site of the Sewage Treatment Plant, adjacent to the southwest bank of the James River at Rockett's Wharf, northeast of the United States Naval Diesel School, in the City of Richmond, Virginia.

The proposal and other contract documents may be examined at the office of the Director of Public Works, 217 Governor Street, Richmond, Virginia, and at the office of Greeley and Hansen, Engineers, 220 South State Street, Chicago 4, Illinois. Copies of the contract documents may be obtained from the office of the Director of Public Works upon the deposit of Twenty-Five Dollars for each set. Any general contractor who submits a bona fide bid on the project will be refunded his payment in full for not more than three sets, and will be refunded fifteen dollars per set for each additional set. All others will be refunded fifteen dollars per set upon the return of the documents in good condition within ten days after the opening of the bids.

J. W. Huffman
Director of Purchases and
General Services

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4894) will be received at Oak View, California, until May 22, 1957, for furnishing labor and materials for modifications of pressure reducing stations and meter stations along pipe-line distribution systems, Cachuma Project, California. Location near Santa Barbara, California. Principal items are lump sums for furnishing and installing materials for modifications of pressure reducing stations and meter stations. Completion time 360 days. For particulars, address Bureau of Reclamation, P. O. Box 97, Oak View, California; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

On or about May 7, 1957, bidding material for construction (except elevators) State Department (extension and remodeling) at Washington, D. C., will be available for distribution to general contractors. Applications from general contractors interested in bidding on this work, for not to exceed 3 sets of drawings and specifications, should be filed promptly with this office and the bidding material will be forwarded as soon as available. Bids will be opened on the date named in the Bidding Forms, which will be June 18, 1957. Bidding material will be available at Room No. 1304, General Services Building, 19th and F Streets, N.W., Washington 25, D. C., Phone EXecutive 3,4900, Extension 2397. Commissioner of Public Buildings, General Services Administration.

OFFICIAL PROPOSALS

Bids: May 16, 1957.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 16th day of May 1957, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. **Nickerson**, District Engineer, 353 Broadway, Albany, N. Y.						
Albany (Rte. 85A)	R.C. 57-50	North, S.H. 124	0.31	Asp. Conc., Opt. = 0.28 Mi. Misc. Work = 0.03 Mi.	$2,000 Plans $10	$38,000
Essex (Rte. 9)	FARC 57-51	Schroon Lake-North Hudson, Pt. 2, S.H. 5180 Project F-383(11)	0.74	9" Cem. Conc. Pavt. 24' Wide = 0.69 Mi. Misc. Work=0.05 Mi. Reinf. Conc. Closed Boxed Br. 30'	$21,000 Plans $10	383,000
DISTRICT No. 2, **Lacy Ketchum**, District Engineer, 109 No. Genesee St., Utica, N. Y.						
Oneida (Rte. 49 & 12C)	FARC 57-48	Mohawk River Road-Marcy, S.H. 296 Whitesboro-Carey Corners, S.H. 5547-5547C.A. Whitesboro-Trenton, S.H. 5325 Proj. U-518(4)	1.33 0.97) (Acc.)	9" Cem. Conc. Pavt. 2@ 24' Var. Wide=1.70 Mi. Asph. Conc., Opt.=0.48 Mi. Misc. Work=0.12 Mi. 1 Hy.Sep.Comp.I-Beam 189.2' 1 Br. Cantilever Truss 316'	$79,000 Plans $25	1,431,000
Madison & Oneida	C.R. 57-1	City of Oneida North-South Arterial Connection, FASH 56-2, Oneida-Southbay, Pt. 1, S.H. 1110	....	Removal & Reinterment of Human Remains	$125 Plans $10	2,200
DISTRICT No. 4, B. F. **Perry**, District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Livingston (Rte. 15)	FARC 57-52	Conesus-Wayland, S.H. 1321 Proj. F-599(4)	4.21	Asph. Conc.=4.09 Mi. Misc. Work=0.12 Mi.	$30,000 Plans $25	545,000
DISTRICT No. 5, E. G. H. **Youngmann** District Engineer, 65 Court St., Buffalo, N. Y.						
Erie (Rte. 20A)	FARC 57-54	Orchard Park-East Aurora, S.H. 1066 Proj. F-1054(3)	1.09	Asph. Conc., Opt.=1.07 Mi. Misc. Work=0.02 Mi.	$12,000 Plans $10	224,000
Erie (Rte. 5)	FARC 57-55	Evans Center-Farnham, S.H. 5634 Farnham-Irving, S.H. 5600 Proj. F-736(6)	6.61	Asph. Concrete	$45,000 Plans $10	795,000
DISTRICT No. 6, J. H. **Thomas**, District Engineer, 30 W. Main St., Hornell, N. Y.						
Schuyler (Rte. 224 & 13)	FARC 57-58	Montour Falls-Alpine, Pt. 2, S.H. 999 Alpine-Cayuta, Pt. 1, S.H. 1233 P.S.C. 5349 & Cayuta-Newfield, S.H. 5474A-P.S.C. 5350 Proj. F-400(5), F-560(5)	4.67	Asph. Conc., Opt.	$20,000 Plans $10	381,000
Schuyler (Rte. 14)	FARC 57-59	Watkins Village:Franklin St., S.H. 5335, Watkins-Yates County Line, S.H. 5334, Gabriels Corners-Starkey, Pt. 1, S.H. 1918 & Gabriels Corners-Starkey, Pts. 1&2, Starkey-, Dresden, Pt. 1, S.H. 8399 Project F-505(6)	3.56	Asph. Conc., Opt.	$110,000 Plans $25	1,987,000
Steuben (Rte. 36)	FARC 57-60	Arkport-Dansville, S.H. 5352-5352A Project F-579(5)	5.11	Asph. Conc. Opt.=5.05 Mi. Misc. Work=0.06 Mi.	$52,000 Plans $15	955,000
Steuben (Rte. 36)	FARC 57-61	Hornell-Arkport, S.H. 5254 Project F-619(4)	2.71	Asph. Conc.	$11,000 Plans $10	196,000
Steuben (Rte. 15)	FARC 57-63	Erwin-Lawrenceville, Pt. 1, S.H. 1593 Project F-593(9)	3.81	Asph. Conc.	$18,000 Plans $10	319,000
DISTRICT No. 7, R. W. **Sweet**, District Engineer, 444 Van Duzee St., Watertown N. Y.						
St. Lawrence (Rte. 37)	FARC 57-47	Morristown-Hammond Pt. 2 S.H. 970-970A Project F-650(5)	4.55	Asph. Conc. Opt.	$32,000 Plans $25	577,000
DISTRICT No. 8, K. G. **Rauer**, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Columbia	TSP 57-1P	Taconic State Parkway, Sect. 9B, Part 2 (West Taghkanic-Martindale)	8.02	Asph. Conc. Opt.=7.93 Mi. 8" Unreinf. Cem. Conc. Var. Wide=0.09 Mi.	$130,000 Plans $50	2,482,000
Columbia	FASH 57-10 FARC 57-49	Rhinebeck-Hudson, Pt. 5, SH 8341 Livingston-Hudson, Pt. 2, S.H. 5073 Rip Van Winkle Bridge-Buckley Corners-Claverack, Pt. 1 and East Approach Rip Van Winkle Bridge Intersect. Project F-492(6); F-863(1)	3.31 (1.35) (Acc.)	9" Cem. Conc. Pavt. 2 at 24' Var. Wide=4.11 Mi. Asph. Conc.=0.47 Mi. Misc. Work=0.08 Mi.	$95,000 Plans $25	1,726,000
Ulster (Rte. 213)	FARC 57-64	Kingston-High Falls, S.H. 229 High Falls-Stone Ridge, S.H. 1464 Project S-461(1)	1.96	Asph. Conc. Opt.	$25,000 Plans $10	440,000
Ulster (Rte. 32)	FARC. 57-72 B.A. 57-1	West Approach to Kingston-Rhinecliff Bridge (Rte. 9W to Rte. 32): Kingston-Ulster Landing, S. H. 306 Project S-479(1)	1.90 (0.76) (Acc.)	9" Cem. Conc. Pavt. 48' Var. Wide=1.72 Mi. Asph. Conc., Opt.=0.94 Mi. Hy. Sep. Prestress, Conc. Beam 155.9'	$72,000 Plans $15	1,316,000
Westchester	FINETC 57-3	New York State Thruway-New England Section-Sub. NE-5 (Rye Interchange Area, East of Boston Post Road) Project I-IN-1068(13)	0.46	Modification to Railroad Facilities and Re-Routing of Communication Lines	$18,000 Plans $25	336,000
DISTRICT No. 9, J. C. **Fadrick**, District Engineer, 71 Frederick St., Binghamton, N. Y.						
Chenango (Rte. 41)	FARC 57-27	Afton-Coventry, S.H. 5698 Project S-668(3)	3.55	Asph. Conc., Opt. Widening Two Exist. Bridges	$20,000 Plans $10	364,000
Sullivan	FESS 57-6	Barryville-Yulan, C.R.21 Project ER-26(2)	1.86	Asph. Conc., Opt.	$13,000 Plans $15	238,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT OF PUBLIC WORKS

Bids: May 27, 1957.

Construction of a Sewer System Hellertown Borough Authority

Sealed proposals will be received by the undersigned at BOROUGH COUNCIL CHAMBERS, BOROUGH HALL, 685 MAIN STREET, HELLERTOWN, NORTHAMPTON COUNTY, PENNSYLVANIA until 7:30 P. M. Eastern Standard Time, Monday, May 27, 1957, at which place and time or shortly thereafter they will be publicly opened and read, and shall cover furnishing all necessary labor, materials and equipment, and performing all work for the "Construction of a Sewerage System" for the Hellertown Borough Authority. Each proposal shall be accompanied by a certified check or bid bond in an amount not less than ten percent of the bid total, all in accordance with the provisions contained in the Contract Documents.

Copies of the Contract Documents, including Drawings and Specifications, may be obtained only from the office of LEONARD M. FRAIVILLIG COMPANY, ENGINEERS, 633 MAIN STREET, BETHLEHEM, PENNSYLVANIA, at which place copies will also be on hand for inspection by prospective bidders, and material and equipment supplies. Not more than two (2) sets of a particular Contract will be allowed to any prospective bidder.

Checks for all deposits shall be drawn payable to LEONARD M. FRAIVILLIG COMPANY and sent to their address as indicated above. Deposit for each set requested shall be as follows:

CONSTRUCTION OF A SEWERAGE SYSTEM $90.00

Full refund will be made only to actual bidders on the above noted Contract, for return of one (1) set not more, of the Contract Documents in good condition within fifteen (15) calendar days after closing date for receipt of bids; refund for return of all other sets in good condition within the same period, will be fifty (50) percent of deposit. No refund of deposit will be made for Contract Documents returned later than fifteen (15) calendar days after date of receipt of bids.

Copies of the Contract Documents, including Drawings and Specifications will be on file, for inspection purposes only, at Borough Hall, 685 Main Street, Hellertown, Pennsylvania, but none can be obtained from the above mentioned place.

Leonard M. Fraivillig Company
Engineers
Bethlehem, Pennsylvania
Hellertown Borough Authority
Hellertown
Northampton County
Pennsylvania

OFFICIAL PROPOSALS

Bids: May 9, 1957

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 9th day of May 1957, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:
DIST. NO. 8, K. G. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.

DISTRICT No. 8, K. G. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
Dutchess and Ulster	M.H.B. 57-1	Mid-Hudson Bridge	....	Cleaning & Painting Existing Bridge	$7,000 Proposal $5	$165,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y. and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON

SUPT. OF PUBLIC WORKS

U. S. Government

ADVERTISEMENT

Sealed bids will be received in the office of the Engineering and Construction Director, Panama Canal Company, Balboa Heights, Canal Zone until 10:00 A.M., E.S.T., June 28, 1957 and at that time publicly opened, for the following: Furnishing all plant, labor, materials, equipment and services and performing all work to convert all domestic, commercial, and industrial equipment on the Pacific side of the Panama Canal Zone from 25 to 60 cycle operation. The work, in general, consists of conversion or replacement of all frequency sensitive appliances, machines and equipment as well as modifications to electrical equipment and facilities in the Pacific Terminal Area of the Canal Zone. Bid data, specifications, and drawings will be available for examination by prospective bidders or other interested parties in the New York office, Panama Canal Company, Procurement Division, 21 West Street, New York 6, N. Y. Data may be obtained upon payment of a deposit of $50.00 for each set, which will be refunded if data is returned within 40 calendar days after the opening of bids. For further information call Bowling Green 9-5380, extension 56.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4898) will be received at the Post Office Building, Grand Junction, Colorado, until June 6, 1957, for furnishing labor and materials for Vega Dam and Relocation of County Road, Collbran Project, Colorado. Location near Collbran, Colorado. Principal items are 1,175,000 cu. yds. of excavation; 800,000 cu. yds. earthfill in dam embankment; 61,000 cu. yds. riprap; 3,840 cu. yds. concrete; 56,000 lbs. installing high pressure gates and appurtenant equipment; furnishing and installing approximately 370 lin ft. of 51-inch diameter steel outlet pipe; and other work. Completion time 900 days. For particulars, address Bureau of Reclamation, P. O. Box 780, Grand Junction, Colorado; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

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POSITIONS VACANT

Position open for Junior College Instructor in Drafting and Engineering Drawing. Apply, Director, Coalinga College, California.

Chief of Party—Must be capable of handling survey parties and have thorough understanding of survey work pertaining to rights of way, curb and street lines, sanitary and storm sewer surveys, and general survey work. Apply by appointment—Office of Howard Madison, Township Engineer, 1 Main Street, Woodbridge, N. J., between 9 A.M. and 5 P.M.

Designer—draftsmen with several years experience in the design of sewage treatment plants, pumping stations and related structures. Excellent opportunity with growing firm in City in Upstate New York. Salary commensurate with ability. Paid vacations, holidays, hospitalization. Our employees know of this ad. P-4729, Engineering News-Record.

Transit Man—For inside and outside work. Must have thorough knowledge of engineering, drafting and calculating, and be thoroughly familiar with deed and conveyance, and tax map work. Apply by appointment—Office of Howard Madison, Township Engineer, 1 Main Street, Woodbridge, N. J., between 9 A.M. and 5 P.M.

Associate Professors, Assistant Professors, or Instructors, (rank and salary determined by training and experience) to teach in the Department of Engineering Drawing, which administers courses in Graphics, Engineering Mechanics, and Engineering Orientation. Year round opportunities for participation on research which replaces part of teaching load during the academic year. Apply to Professor Carson P. Buck, Chairman, Department of Engineering Drawing, Syracuse University, Syracuse 10, N. Y.

Structural engineer for building design. Ketchum and Konkel, Consulting Engineers, 1090 Fox Street, Denver 4, Colorado.

Associate professor for transportation and soils engineering in C.E. Dept. of large eastern metropolitan university. Probable starting salary in neighborhood of $7,500 for nine months depending upon qualifications. P-4805, Engineering News-Record.

POSITIONS VACANT

Teaching position in civil engineering and/or mechanics starting next September. Salary and academic rank dependent on qualifications. Salary up to $7,500.00. Location New York State. P-4840, Engineering News-Record.

Assistant Professor to teach mechanics and/or civil engineering starting next September. Salary $6,500.00 Ph.D. desirable. Location New York State. P-4839, Engineering News-Record.

Designers - Electrical - Piping - Struct. Power Plants and Industrial Buildings. Marbarry Corp. 120 Greenwich St., New York City 6, N. Y. REctor 2-3749.

Engineer — Superintendent — Interceptor Sewer Project in Pittsburgh area. Good arrangement for right man. Must be experienced. Send qualifications and references in first letter. P-4859, Engineering News-Record.

Mechanical or Civil Engineer position available recent graduate who prefers the diversified responsibilities of staff position with a well established growing business. Write P-4857, Engineering News-Record.

Superintendent Wanted: Man experienced in construction of High Class Monumental Buildings. Only man with great depth of actual experience in this class of work should apply. P-4570, Engineering News-Record.

Structural Steel Detailers, Checkers and Sales Engineer Position. Open. Location center of Eastern Oklahoma resorts area. P-4892, Engineering News-Record.

Senior Cost Engineer familiar with the Uniform System of Accounts for electric utilities. Duties will consist of analyzing completed major construction projects for an Electric Utility. Experience with the Federal Power Commission or a State Public Service Commission would be desirable. Some experience with the Property Record Department of any Electric Utility would also be an asset. Indianapolis Power and Light Company. Employment Department, 1220 West Morris St., Indianapolis, Indiana.

Wanted Experienced Chief Of Party, Civil Engineer and/or Surveyor. Permanent position in Michigan. Submit resume first letter. Salary open. P-4911, Engineering News-Record.

(Continued on opposite page)

EMPLOYMENT OPPORTUNITIES

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P. O. Box 12, N. Y. 36. May 9th issue closes April 29th

POSITIONS VACANT

Continued from opposite page

Wanted Experienced Structural Draftsman and Detailer. Bridge experience preferred but not essential. Locate in Michigan. Submit resume first letter. P-4912, Engineering News-Record.

Civil Engineer II: Salary range $5,720-$6,864 annually. Age: 25-55. Qualifications: B.S. degree in civil engineering plus two years' experience. Driver's permit. P-4470, Engineering News-Record.

Mechanical Engineer, 25-40, graduate—to develop and manage mechanical engineering department of firm of Consulting Engineers & Architects (offices in the Upper Midwest and Southwest). Experience in heating, piping and air conditioning desirable. Paid vacations, holidays and sick leave. Group health and hospitalization insurance. Excellent opportunity to grow with the company. Salary open. Mail qualifications to Scott Engineering Company, P.O. Box 863, Watertown, South Dakota. Interviews will be arranged.

Reinforcing Steel Detailer wanted by Bar Fabricator. Excellent salary and good chance for advancement. Two to three years experience preferred. Send resume or phone York, Pa. 7741, Brocker Mfg. Supply Co.

Excellent opportunities for an active salesman and also a semi-retired man, both with good contacts with engineers in the heavy chemical and paper pulp mill fields, to represent firm of contracting engineers specializing in corrosion control protective coatings (not paint). Drawing account and expenses against commission. Please state age, experience and full particulars. P-4942, Engineering News-Record.

Map draftsman for surveyors office located in Chicago, Ill. State qualifications in 1st reply and sample of lettering. P-4692, Engineering News-Record.

Checkers: Heavy pressure vessel shop needs experienced old timers. Top wages and overtime. Many fringe benefits. Florida type climate and country's finest hunting and fishing. Some detailers also needed. Permanent and expanding work load. Apply with full particulars and photo to Emile Lusted, Chief Engineer, Delta Tank Manufacturing Co., Baton Rouge, Louisiana.

Structural Engineer for permanent position with established consulting engineering firm in South Florida. Experience in multi-story design, reinforced concrete and structural steel desirable. Salary open. P-4958, Engineering News-Record.

Wanted-Assistant City Engineer, City of Easton, Pennsylvania, for general city engineering work. Reply stating age, education, experienced and background and salary expected should be addressed to the City Clerk, City Hall, Easton, Pa.

A new expanding construction materials laboratory in the Southwest needs a manager experienced in materials and soils. Graduate engineer desirable but not essential. Dynamic, aggressive, administrator is essential. Income $4800 plus percentage of profit. Please send brief resume of experience, references, etc. P-4949, Engineering News-Record.

City Engineer: Graduate Civil Engineer with municipal experience in street improvements by the direct assessment district method. Starting salary, $7,000. Applicants should apply to Personnel Officer, City of Boulder, Colorado.

Estimator, tops only, career minded to train as Asst. Exec. for Bergen Co. Indus. Bldr., Write following, salary, non-business interests, full details. P-4956, Engineering News-Record.

Two teaching appointmens in C.E. Department, work to begin Sept 1, 1957. Salary and rank depend upon qualifications. M.S. degree not required, may be obtained while teaching. Dept. of Civil Engineering, Univ. of Nebr., Lincoln, Nebr.

POSITIONS VACANT

Gunite Superintendent—Wanted immediately. Middle Atlantic States. State age, experience, availability, salary desired. P-4640, Engineering News-Record.

EMPLOYMENT AGENCY

Wanted Engineers, Designers, Draftsmen All lines. Chemists, teachers and industrial engineers. Recent grads. Cleveland Engineering Agency 2132 E. 9, Cleveland 15, O.

POSITIONS WANTED

Mechanical Engineer — Age 31 — contracts manager, project engineer—supervisor machinery and mechanical equipment installation. 8 years experience heavy construction foreign and domestic, field and office. Excellent references. Seeking opportunity N.Y.C. or vicinity metropolitan area. PW-4764, Engineering News-Record.

Superintendent Construction over 20 yrs. experience, varied projects, industrial to high class finish. Engineer. Anywhere. PW-4742, Engineering News-Record.

Project Mgr. — Superintendent, heavy & bridge construction, fully qualified in all phases, 20 years exp. $200. PW-4810, Engineering News-Record.

Construction Supt., ready for next step up. 12 yrs. exp., specializing in concrete, comm. and ind. const. Eng. background, B.A. deg. Will relocate anywhere. Excellent ref. PW-4785, Engineering News-Record.

Chief Estimator—Age 31—B.S.C.E. Capable of handling job from bid to completion. Experienced industrial, commercial and institutional. Excellent record. PW-4789, Engineering News-Record.

Contractors Engineer, P.E., 33, experienced in broad phases of building construction desires affiliation with foresighted building and/or heavy construction contractor where he might use his ability and ambition to their mutual advantage. PW-4781, Engineering News-Record.

Graduate civil engineer, eight years experience as a construction engineer with a midwestern state highway department. Desire responsible position with firm contracting highway construction. PW-4885, Engineering News-Record.

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Engineer-Estimator, 30, BSCE. Desires responsible position with general contractor. 4 years estimating and administrative experience in municipal, commercial and industrial buildings. 3 years diversified field experience. PW-4870, Engineering News-Record.

Construction manager-engineer, 30. Degree in architecture. Solid experience in design, estimating, project management, both field and office. Desires permanent position West or Southwest. PW-4872, Engineering News-Record.

Estimator-Project Manager. Lic. Engr. young, able, progressive, experienced in all phases of construction: estimating, project management, purchasing, subcontract control. Desires connection with genl. contractor in the Southwest. PW-4898, Engineering News-Record.

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Construction Executive available—16 years experience with general contractor. Excellent profit making background. Desires to relocate South-West or Far West. Can handle project from bid to completion. Available June 1st. PW-4897, Engineering News-Record.

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Structural Engineer, 27, BS desires European job. Immediate or future assignment. 5 years design and field experience. PW-4880, Engineering News-Record.

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Civil Engineer, 26, very good background perfect knowledge of Spanish Engineering experience in Argentina and USA interested field work in South America. PW-4950, Engineering News-Record.

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Estimator, Project Manager, Purchasing, Highway Construction. 40 years experience, 60 years of age, good health, Long Island preferred. PW-4913, Engineering News-Record.

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Liaison and Sales Engineer selling design service, also project engineer, twenty years structural and mechanical background, seeks new connection. PW-4907, Engineering News-Record.

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P-4635, Engineering News-Record,
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P-4228—Engineering News-Record
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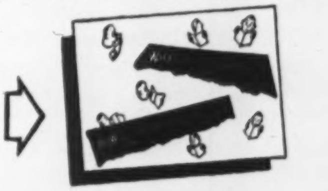

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Voters Back Home

SPURRED BY LETTERS from voters back home, Congress is making its most determined effort ever to cut the budget requests of the various government departments. The results may not be spectacular, but the process is a useful one. Forced to defend their requests, department heads are definitely subjected to a brake on any free-spending tendencies they may have. But perhaps more important, the ensuing debate brings the public face to face with the fact that many items are in the budget because of legislation passed under the pressure of letters from voters back home—sometimes the same voters who are now writing letters urging economy.

In the field of public works, for example, there is the $50 million grants-in-aid for pollution control. Grave doubts were expressed in many places, including these pages, of the advisability or necessity of this federal assistance, but it was voted, and the Department of Health, Education and Welfare had no choice but to budget it.

Then there is the matter of Title I slum clearance. Proposed cuts in aid for these urban redevelopment projects have met loud protests from the voters back home. A committee of mayors called on the President to protest any plan to reduce slum clearance funds, and Robert Moses pungently expressed his pessimism that New York's big Lincoln Square development would have to be abandoned unless the federal government is more generous.

Aid for schools is another question at issue. Legislation committing the federal government to this program has not yet been passed, but many voters back home are in favor of it. The budget as a consequence includes a $451 million item for aid by the federal government to school construction.

These are cited as typical programs of federal aid for local facilities. There are others, but the important point is that they all represent demonstrated local needs, on which voters back home have passed the responsibility to the federal government. Because this is all too easy, and because Congress is often amenable, the federal budget is bound to grow. Once a year, as of now, both the people and Congress are given an opportunity to reflect on the consequences—and the alternative.

The consequences are, of course, continued growth of the federal budget as the country's needs grow. In itself this is not dangerous; what is dangerous is for the federal budget to take an increasing share of the total national income, which fortunately the current budget does not do. As to the alternative, this would be for the states and the municipalities to do many of their necessary tasks without federal aid. Almost always it would be less costly, at least by the amount of federal administrative costs which must be added to the local administrative costs. But the tendency has been to gloss over this fact and to expand the number of federal aid programs. And the federal budget reflects this tendency.

So, the voter back home should reflect on this fact at budget cutting time. He has it in his power to reduce the cost of federal government if he will assume the added cost to state and municipal government. And there will, of course, be added costs, for the sewage plants, the urban redevelopment and the schools cannot just be forgotten—not if the country's standard of living is to be increased and its economic growth is to be continued.

That is the central fact. Growth must continue. In the realm of public works, cost savings would be possible if the federal government did less and the local governments more. But the voter back home is the one to decide. He cannot just criticize big federal budgets, and continue to pass along his responsibilities at home to the federal government.

Loans for Foreign Aid

TWO SIGNIFICANT PROPOSALS for changes in our foreign aid operations are rapidly gaining favor in Washington, and if adopted will be of importance to the U. S. construction industry. One is to move the strictly military aid items into the Department of Defense budget, where they logically belong. This will permit the economic and technical assistance items to be seen without confusion. The other proposal is to substitute loans for grants in the economic assistance program in so far as possible.

The loan proposal is particularly significant. It would permit longer term development projects to be undertaken than has been possible. Loans are more acceptable to many countries than outright gifts. And loans might be less costly to the U. S.

The loan idea, however, needs to be adopted with caution and administered with extreme care. Some of these loans will never be repaid; that fact needs to be accepted in advance. Such loans in some instances will be in competition with loans by the World Bank or by private investors; the program will have to be administered with care in order that "easy" assistance loans will not go to those who can afford to take normal ones.

Economic and technical assistance to underdeveloped countries has been declared to be a necessary part of our national policy by every committee of business men which has studied it, as well as by our government leaders. In some way it should be put on a basis that the people at large can understand, and that Congress will readily support. These new proposals should go a long way in assuring these results. In any event it will be easier to justify $950 million for economic and technical assistance than the $4,150 million for military and economic and technical assistance combined, which Congress is now debating with such heat.

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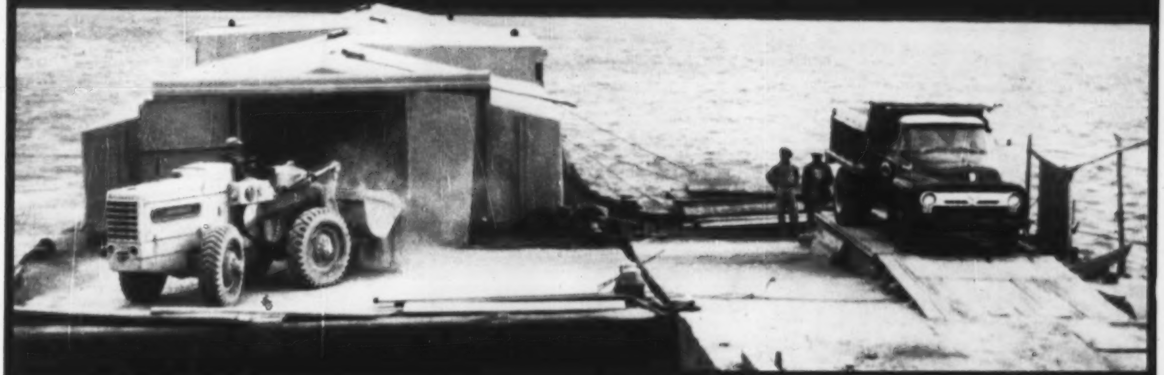

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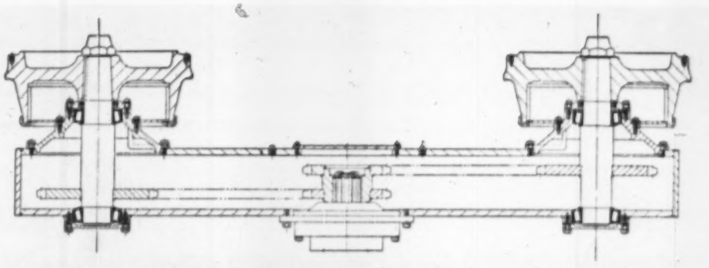

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